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THE FUTURE OF MEDICAL PRACTICE.[1]

By DOUGLAS ROBB,
Auckland, New Zealand.

I APPRECIATE the honour you have done me, Mr. President and members, in asking me to speak to you. The President of the Auckland Division of the British Medical Association, Dr. Chisholm McDowell, sends his greetings to you.

The subject you have given me is a wide one. I propose first to picture the future as I see it, and then to examine what has been done publicly in New Zealand in that light, and perhaps finally to moralize a little thereon. But I must begin by defining the attitude I have adhered to over the fifteen years I have been thinking about these things. It seeks to place foremost the welfare of the people and the progress of the beneficent art and science of medicine. It takes the functional view in society of medical knowledge and the work of medical men. It does not place the aims and methods of either politicians or professional groups as such in the most important place, believing rather that both these groups should come to embrace the functional view also, and that the success of both politicians and professions may be measured by the rate of their progress towards such objects.

To a person taking this view, an endeavour not without difficulty to anyone fully immersed in professional affairs, there are obvious obstacles to success in present methods of practice. Let us take first specialist practice, which seems to me the easier half of the problem, and deal with general practice later.

Specialist Practice.

The specialist works in a very different intellectual and social climate from the general practitioner—not better nor worse, only different. He needs to have an intellectual alertness that makes it easy for him to read, write and speak, and also at times to use the language of mathematics in these processes. He must have his critical faculties constantly in play towards his own work, and that of his colleagues, both near and far. Many specialists need manual skill, and to be at home with mechanical devices. Though most of them deal primarily with patients, and lose no opportunity of making human contact with them to help them through experiences which are frequently very trying, their prime appeal is to medical knowledge and skill. They are at least one step further removed from the patient than the general practitioner, where the link is a human and emotional one. With us in New Zealand, however, the access of patient to specialist remains all too often just as easy as to the general practitioner, and the specialist spends a fair proportion of his time and energy—willingly or unwillingly—appealing to his public. He badly needs relief from this, and freedom to devote himself to his real task.

The specialist needs the basic training in medical school and hospital. He then needs post-graduate advancement in both scientific and clinical aspects of his subject, and finally suitable facilities for practice. These include rooms and equipment for consultation and investigation, and hospital beds and services. A well equipped out-patient section of a hospital closely related to his ward facilities, and free access to consultation with other branches, both clinical and scientific, offer his ideal set-up.

It matters little to me whether such a set-up is provided publicly or privately, if only it is efficient and complete. I am not familiar enough with Australian conditions to prognosticate for them, but certain New Zealand conditions, perhaps contrasting with yours, may interest you. We have always had a complete hospital system under public auspices, and in it there have never been private or community wings or beds. There is even less likelihood of this in the future than there has been in the past. This has meant that all medicine and surgery of the more difficult kind—all specialist practice indeed—in private practice has had to be carried out in private consulting rooms and private hospitals. Both rooms and, more particularly, the hospitals have found it difficult to advance in step

[1] Read at a meeting of the Victorian Branch of the British Medical Association on June 4, 1947.

with the needs of modern medicine which continues to grow so complex and costly. Today, with the optimum unit more like 300 beds than the 20 or 30 beds of many private hospitals, and the cost around one million pounds, to say nothing of the almost insuperable difficulties in building, staffing and equipment, it is hard to be sure of a future for private specialist practice. I believe it can and should continue to the extent that it can efficiently be carried out, but that extent is now not great in New Zealand and is shrinking before our eyes. Difficult cases, and cases in which patients stay a long time in hospital, and cases in which special teams are needed for theatre and ward work—for example, orthopædic, major rectal, and thoracic and neuro-surgical cases—have already come to lie almost wholly in the public hospital sphere, and other groups are following suit.

To me the only answer worthy of the profession and of the people in New Zealand is a salaried specialist service under some form of public organization. I believe the profession should adopt that as their policy and press positively for all the features which they know to be necessary if it is to be made effective in the service of the community. These include full facilities in polyclinics and hospitals, proper training for every specialist, periodical leave for study purposes, library service and adequate retiring allowances. Complete academic and scientific freedom must be recognized from the outset. To meet the obvious dangers of an hierarchical service, I would insist on the adequate recognition of serving specialists on the management committees at all levels, and on a decentralization of control into about six main centres throughout the country. I think that such safeguards would meet satisfactorily the objections we all instinctively fear in any organized service, and that the resulting liberation from present financial and professional struggles would well reward us.

I do not agree with those who would retain the fear of poverty and/or the prospect of wealth as necessary stimuli to the effort of each and every medical man, particularly the specialist. We should have passed that stage. With all the unsolved problems of medicine—evil psychology, tuberculosis, cancer, and all the rest—we of all people should not need the old-fashioned goads. Let us get our teeth into the cure of cancer, rather than into one another, or into the body politic. I have seen very happy and fruitful cooperation amongst medical men towards such good objects in medical schools, and am told it occurred also in the medical services of the armed forces. Why should it not occur in civil life?

Specialist service in scattered rural areas could be made much better and more readily available to those who needed it, and at less cost than at present, by extending this conception. At a rural centre could be maintained a complete team of specialists, doing most of their work in their base hospital, but also available throughout their country circuit for consultation and for assistance when necessary, using every applicable form of modern transport. The day of a traditional type of New Zealand doctor (and I have no doubt he is known in Australia also) seems to me to be over—the man who would combine a big general practice with major medicine, surgery and obstetrics. These men in the past have often been fine types, and their labours have been prodigious. But with the complexity of modern medicine, and the higher standard the patient has a right to expect in both the general and the special fields, we are now in duty bound to plan differently.

General Practice.

The general practitioner's branch of our work seems to be in greater disrepair than the specialist's, from both doctor's and people's points of view. In most countries there seems to be a distaste for general practice amongst oncoming medical men, and an equally persistent complaint from the people that they find it hard to secure regular continuous general service.

The general practitioner is the first port of call for a person in distress about himself or a member of his family. The relationship is a personal one, and much more emotional than intellectual in quality. The patient must trust the doctor as a man—quite apart from his knowledge—and the doctor must be fond of his flock and be glad to serve them. The more he knows about them in all circumstances the more he can help them. Length of association is an important factor. Accessibility also is of prime importance. The general practitioner's appeal is primarily direct to his public, and his medium is art rather than science.

While this contrast between general practitioner and specialist cannot be pushed to extremes, I feel we have erred in the past—and especially in view of the increasing complexity of modern medicine—on the other side. We have been too ready to let the people believe that each one of us is omnipotent, or at least competent in too many spheres. The reasons for this are confused, but should be examined. Fifty years ago the belief might have been largely justified, and even later in the days of the earlier specialists, who were usually senior general practitioners, who had become prosperous enough to shed their general work in part and practise a specialty. But each specialty now demands a much more serious and rigorous approach than that, and if, as I maintain, the whole atmosphere of the two branches is utterly different, we are now obliged to maintain this publicly and plan accordingly.

It must be admitted that confusion between the two fields and improper transitions between the two have been connived at by the profession for reasons that will not bear too much scrutiny. The general field is the one in which an income is ordinarily made more promptly than in the special. The special on the other hand has ordinarily provided a more regular and "respectable" life. The fields have been often chosen by men for these reasons. How much better for the people, for the men, and for medicine if each field were planned to give the most dignified and respectable professional life possible, and if men with special aptitudes for each, enhanced by suitable and necessarily different trainings, were regularly to reach their correct field!

With thoughts like these in my mind I first set out in 1935, with two colleagues, our conception of general practice conducted cooperatively by groups of doctors in special buildings to be called health centres. The years between have confirmed me in my ideas, and we have all witnessed the widespread discussion in Britain and elsewhere of such a conception. I understand you have some examples working in Australia. In New Zealand we have as yet no complete example, which still surprises me, though I think I can give reasons. Under social security there can be no financial barrier—practice and its rewards are easily come by, perhaps too easily. When work gets too heavy and receipts are too painful when it comes to tax-paying, the individual doctor often signs off. The result is hardship for the person with the genuine emergency and the troublesome complaint, and is no credit to us as a responsible body. The truth is we have been rewarded richly, but we have not as yet got together for mutual relief, and more complete service to the people. The latter object must be served, and if we do not assume the task ourselves, we open the door to the lay tyrant.

I will not labour the details of cooperative group practice and its health centre. *The Lancet* has recently given us (January and February, 1947) a series of articles on "The Health Centre of the Future", and seven of my colleagues and I in 1943 described it in detail in "A National Health Service". Briefly, we envisage the health centres as serving general but not special practice, and including maternal, infant, child, and school health services in them—fusing and sharing with that of the practitioners the work now done by health department doctors. One would like to see dentists and pharmacists sharing the centre also. The emphasis would be on educational and preventive measures in the course of ordinary general medical services. The patient should choose his doctor from the group and be in the same personal and private relationship to him as at present. At nights, week-ends, holidays *et cetera*, he would have to take the services of the man who happened to be on call, but he would be sure of getting help. The alleged 24-hour, 365-day service from one man must be largely illusory, though the layman does not always realize it. The doctor could live away from the shop and be sure of leisure, and his

wife and family immune from the telephone—all calls for help would go to the centre. Each doctor could cultivate a degree of special interest.

The optimum staff for such a health centre varies from four to fifteen or twenty doctors, and the population to be served from 8,000 or 10,000 people to 30,000 to 50,000. Much would depend on the size and compactness of cities, and the size of small towns and centres. Auckland is very scattered, and we thought few centres should have more than four doctors each for about 10,000 people. I have seen suggestions for Australian cities for centres staffed by fifteen doctors. In the country there will inevitably be places where only three or two doctors or even one doctor will be needed.

On the subject of management and control of such centres I have a very open mind. The method in its completeness is the important thing and whether it be privately or publicly managed is a secondary matter. To me it is extraordinary in New Zealand that with prepaid medical services for the past five years no practical step towards such a scheme, even in isolated examples, should have been attempted, either by Government or doctors. Such interest as there is is found chiefly amongst lay people.

One must admit, however, that the universal adoption of such a plan for general practice would mean a considerable degree of organization and public control. I myself would be willing to face that, on the same basis as I would with specialists—full recognition of serving personnel on management committees at all levels, scientific and professional freedom, good conditions of work and all the rest. We have pictured in New Zealand about six regional health boards, each serving about a quarter of a million people, and providing for its area all health services, from base hospital and urban health centres to remotest district nurse. That would allow the correlation of effort between general practice and hospitals—at present sadly and wastefully absent. It would also obviate the errors of over-centralization and remote control, and stimulate healthy rivalry between the regions to do good work.

Remuneration of practitioners in such a scheme is a more difficult problem than with specialists. Some, including notably your own Arthur E. Brown, favour salaries, others violently oppose them. A progressively minded senior in Johns Hopkins told me last week in a letter that the profession in the United States of America would fight to the death for "fee-for-service" which has proved so disastrous in New Zealand. Personally I favour either capitation, or basic salary *plus* extras according to service, as in Britain.

In realistic vein one must admit that there are many barriers towards anything like an early realization of such schemes. There are apathy and ignorance on the part of the politicians and public generally, and on our side many stumbling-blocks arising out of our traditional modes in education and practice. All the emphasis in medical education has been on the organic, as against the social and psychological. All the students' teachers are scientific men, and on the practical side, specialists. General practice is scarcely mentioned except in derision, and the hospital period convinces them that no medicine outside the hospital type is of interest or value. What is needed to redress the balance, is the incorporation of sociology, psychology and the humanities into the students' field, and the provision of health centres in association with the medical schools where true general practice of the type called for by modern conditions can be taught as part of their training. Let me invoke Lord Horder to support these points:

> . . . if it be advanced that the doctor's training has not, up to now, fitted him for work of this sort, then the sooner it does so fit him the better. Inevitably the doctor's work in the future will be more and more educational and less and less curative. More and more will he deal with the physiology and psychology of his patient, less and less with his pathology. He will spend his time keeping the fit fit rather than trying to make the unfit fit. And we must make it worth his while to do this work. This reorientation of his education, and of his work, is overdue, and it will remain overdue until reorientation occurs in the attitude of the health authorities towards him and towards his sphere of usefulness.

The old individualistic outlook of the medical profession must somehow be tempered by ideas of cooperation towards social ends, if we are to fill a useful place in the modern world. But how far off are all these things? How long does it take to change the curriculum, the outlook of the teachers, and to produce a changed product? Yet I am very much aware that the people seek all these things from us, and will somehow and some day tell us in no uncertain voice.

Medicine Under Social Security in New Zealand.

Historical.

In spite of various omens from World War I onwards, including a departmental report on the subject in the declining months of the National Party's Government in 1935, the public organization of medical services became a live issue only with the election of the first Labour Government in November, 1935.

From February, 1936, to September, 1938, the Government formulated its plans for its Social Security Bill, which was presented to the House in September, 1938, and was passed and became law soon after. Various committees travelled the country and prolonged negotiations between the Government and the New Zealand Branch of the British Medical Association took place. The Branch put forward its views, which had been worked up and agreed to by all divisions. They included a complete medical service for the indigent, and a contributory system of insurance for all others who were unable to provide themselves with hospital, laboratory and specialist services. The family doctor's services should be provided by the people themselves either privately or through friendly societies. Reform of the hospital system was also proposed. The Government did not explain its proposals fully, but hinted at a universal, free general practitioner service, with specialist services later.

These negotiations were unhappy and unproductive. The Government was not at pains to conceal its disapproval of the Branch, but was never frank about its own intentions. Indeed, only after the Social Security Bill was introduced into the House were its contents made known to the Branch. There is no doubt that the bill was political in its conception, and that technical and professional considerations were almost entirely ignored. There was also, at least at the outset, a humanitarian motive behind it.

The *Social Security Act*, 1938, had two main objects. It was intended to substitute for the existing system of non-contributory civil pensions a system of monetary benefits on a contributory basis. It also made provision for the inauguration of a system of medical, hospital and related benefits. The money was to come from a new social security tax of one shilling in the pound, payable by practically everyone in the community. The social security tax came into force on April 1, 1939, and has been collected since.

The medical benefits were to consist of a general practitioner service, maternity benefits, hospital benefits and pharmaceutical benefits as the four original undertakings. Apart from these four benefits, the bill foreshadowed, but did not provide for, a number of others—for example, radiological, laboratory, anæsthetic, specialist and consultant, dental, ambulance, home nursing and domestic assistance benefits.

Soon after this there was a general election, hotly contested largely on the social security issue. Members, including high officials, of the Branch were prominent in the campaign, mostly for the National Party, and the *Social Security Act* was freely used in endeavours to discredit the Labour Party. It was, however, returned with an absolute majority. It was returned again in 1943 with a less substantial majority. On that occasion social security was not a dominant issue, nor was it in 1946 when the majority was reduced to a very small margin.

Inauguration of the Various Benefits.

Early in 1939 negotiations between the Government and the New Zealand Branch of the British Medical Association were resumed, but they were never fruitful. It became

a matter of the Government introducing benefits in turn, and often being obliged to alter them under protest from the Branch and other quarters.

Mental Hospital Treatment.

Mental hospital treatment was made free to everyone in April, 1939. The mental hospitals of New Zealand have always been conducted as a Government service and system.

Maternity Benefits.

Maternity benefits were proposed in April, 1939. The terms of contract between Government and doctor were considered irksome to both patient and doctor, and there was no provision for consultant help. Only two doctors accepted the contract. Later alternative proposals were brought forward, and after negotiation on good terms between Government and Branch, the benefits came into force in November, 1939. The plan is payment per service rendered, with no contract, the patient certifying the service on a form which then becomes a claim on the Social Security Fund. The fees are considered "satisfactory to good" (no bad debts) and include now £6 6s. per case for pre-natal, confinement and post-natal service. Extra fees are allowed for toxæmia, blood transfusion, consultation, mileage, *et cetera*. A roll of specialists in obstetrics has been compiled by the Government, and those whose names appear on it may charge higher fees, though the extra is not paid by the fund. The patient also has the bulk of her hospital fees paid, even in a private hospital. Proprietors of these hospitals are well pleased, though some people complain that hospital fees have risen steeply and that the patient is no better off. Maternity benefits are generally considered the best of the bunch in practice—they give general satisfaction. Nevertheless nothing by way of provision of post-graduate training was considered in relation to the scheme. The Government is, however, sponsoring a part at least of the projected teaching hospital for women in Auckland.

Hospital Benefit.

Hospital benefit was introduced in July, 1939. It made the services of the public hospitals entirely free to all. The main step enabling this was the payment to the hospital board of six shillings per patient per day, later raised to nine shillings, together with sums for out-patient attendances, X-ray examinations and physiotherapy, *et cetera*.

It should be understood that the public hospitals were financed—until this change—in about equal proportions from local rates and national government subsidy. The social security change gave the Government a greater responsibility for finance—since 1946, when the local rates were stabilized at a uniform level throughout the country, amounting to 70% to 80% of the total burden—but has not yet altered the system of control by the Board, of which all the members are popularly elected on a local basis.

Private hospitals also receive this nine shillings per patient per day, but fees have risen so steeply of recent years that the benefit to the patient is hardly noticeable. Costs also have risen and some private hospitals have closed, being harassed also by staffing difficulties.

In assessing the value to the people of these hospital benefits, it must be remembered that, particularly in some of the large cities, the public hospitals have lagged far behind modern standards and are feared by a proportion of the people. There is often no out-patient department at all, or, if present, it may be inadequately housed and staffed. In addition, the pressure on hospital beds, together with both war conditions (military patients and absence of medical staff, *et cetera*) and post-war shortages, makes the service often illusory. For months on end only patients with acute conditions will be admitted, and the patient with a hernia, for example, often cannot claim his hospital benefit. In general, too, building programmes are years behind requirements and innumerable improvisations of accommodation commonly occur.

Another accompaniment of hospital benefits was the cessation of the honorary system of staffing. The part-time staff now receive varying sums (£500 to £600 *per annum* for a senior and £250 to £300 for an assistant physician or surgeon) for their work. In some instances, of course, there was already a full-time "closed staff". This carries on, and, as might be expected, it is usually overworked and sometimes underpaid.

The Pharmaceutical Benefit.

The pharmaceutical benefit came into force in May, 1941, with little notice to the chemists. Any chemist can contract to give the service, which is well paid, especially when mixtures are repeated. The patient pays nothing; he merely hands in his prescription, and countersigns it when he receives his bottle. As time has gone on, the "free" list of drugs has increased, and now includes all hormones except gonadotrophic, and all the sulphonamide drugs. There has been a considerable increase in the use of the older type of mixtures. The chemists seem well pleased financially. The total cost of pharmaceutical benefits has risen steadily, and now reaches almost fantastic proportions.

Costs in 1942-1943, the first full year, were £563,247, and there has been a large increase each year up to £1,133,366 in 1945-1946. The schedules of allowed drugs have been steadily widened, and include almost all modern hormones and synthetic and biological preparations. These categories are, generally speaking, costly, but they also represent some of the most advanced achievements of modern medicine, and so should rightly be available. They should, however, be used much more critically by the doctors, and not ordered as placebos to the importunate and to the neurotic, as so often happens. Post-graduate teaching and research units in the country could do a great deal by way of careful testing and of defining the useful scope of new preparations, and by the communication of their results to the profession. Major economies also could be achieved by improved methods of procuring supplies, and of making sure of their potency. Supplies come now through ordinary trading channels, largely from overseas, and the cost is heavily burdened with charges for advertising and competitive salesmanship.

An institute for pharmacological research into the products used, and potentially useful ones naturally occurring in New Zealand, should have been made an integral part of the system from the outset. It is a necessity and could be very handsomely financed by taking a levy of 1% from the annual costs, with an ultimate saving to the country of very much more. But when all is said and done, we use far too much pharmaceutical material in New Zealand, and this tendency has been strongly fortified by the style of these benefits under social security. Doubtless it was not so intended, but there seems no real escape with things as they are. The effects of this benefit on the patent medicine trade is not yet clear, but no great injury to it is apparent.

Radiological Services.

Radiological services, both diagnostic and therapeutic, were made free in public hospitals in August, 1941. This was done almost at a moment's notice, without any known survey of resources in men or materials, nor plan to secure adequate supplies of same, which are still utterly inadequate. Private radiologists work on an agreed schedule of fees, the patient paying roughly 50% and the Social Security Fund 50%, and appear well pleased. Specialist radiologists are recognized as fully "viable"; part-time radiologists have a claim only for certain services.

Physiotherapy.

Physiotherapy in 1942 was made free to all in public hospitals and government spas, and in 1943 a schedule of fees was agreed to by private practitioners. Of the fee 50% is paid by the patient and 50% by the fund, the latter figure being arrived at as the cost of giving the same service in a public hospital. The average fee is seven shillings per treatment, of which the patient pays three shillings and sixpence. Extra may be charged when the practitioner visits. Everyone is well pleased, but there are not nearly enough practitioners in either hospital or private practice to do the work.

Medical Benefits, or the General Practitioner Service.

With the outbreak of war and the sending of many active medical men into the armed forces at home and abroad,

a lull in proceedings took place until February, 1941, when the new Minister of Health, the Honourable A. H. Nordmeyer, announced that the general practitioner service would begin forthwith. It was to be a capitation service available to all, the doctor to receive fifteen shillings *per annum* per patient (man, woman or child) on his list, with extra for mileage. The contract was to be between patient and doctor, with free choice and right of refusal. The patient was to take a card to the doctor of his choice and have it countersigned. No limit was imposed on the doctor's list. There were a number of penalties for dereliction of duty.

British Medical Association spokesmen kept up hostile exchanges with the Government in the months preceding this announcement. The Government had not consulted the Association, the scheme was not a good one, and even if it had been, it would have been quite impossible for the doctors to undertake it, with 25% of their members and their most active section abroad on military service, and the remainder overworked with civil and military demands at home, to say nothing of immediate and remote demands which might be much heavier still.

The people were remarkably apathetic and were slow to enrol. The trade unions and others exerted pressure on their members to seek willing doctors. Wisecracks were uttered in the House by Opposition members of Parliament about "first catching your hare". As time went on it became apparent that only a few doctors were enrolling patients; in the largest city only one man; more in scattered country districts. In all, only forty to fifty men out of a possible seven or eight hundred were found, six months later, to have undertaken the service.

In certain country districts, particularly one-doctor areas, the scheme is reported to be working well, having been embraced by all sections—political and social—of the community. The doctor is pleased with the more dignified relations with his patients and is often better off financially. No undue demands are made upon him. In the case of the urban area, good reports are also given, though in both cases it must be remembered that the men working the scheme were predisposed in favour of it.

Its failure as a general solution for the country led to the "second version", to be mentioned later. Opposition from the British Medical Association was determined, though no tremendous internal efforts were made to harden the front. Preoccupation and overwork on the part of the doctors kept many of them aloof from any active struggle.

There is no doubt that the people were surprised and disappointed that the onus had been placed on them of finding their doctor, after paying the social security tax steadily for two years. Official British Medical Association comment at this stage ran as follows: "The Government was in the position of a broker who had sold to the public (and taken the money) something which he did not possess, had made no arrangements to obtain, and was unable to deliver. The position now is that the broker has confessed his inability to fulfil his contract, and says to his clientele: 'If you can get this for yourselves, I will pay'."

The Government continued for some months to hope that the doctors would gradually come in, and as time went on began to issue threats of coercion, which inclined public sympathy rather towards the doctors.

A general election being due in November, 1941 (it was later postponed for twelve months), the tax for social security having been collected for more than two years and the promise of the main benefit (general practitioner service) being still unfulfilled, the Minister, the Honourable A. H. Nordmeyer, proposed at the end of August, 1941, a "fee-for-service" plan. The Branch had not publicly altered its official view of some four years' standing, but it was known that a section, chiefly general practitioners, was willing to consider a "fee-for-service" plan. There was a general dislike in the profession for a panel scheme of universal application, and the doctors still considered it a bad time (war-time) to make any major change.

The National Health Insurance Committee of the Branch met the ministers towards the end of August and subsequently, but as the nature of the new proposals became apparent, hostility rapidly developed. The first version was that from a "bottomless pit" a fee of five shillings would be paid to the doctor per attendance at his rooms, six shillings and sixpence in the case of a visit to the patient's house, and extras for mileage *et cetera*. It was to be illegal for a doctor to collect fees in any other way. A public outcry was raised, doctors, clergy, chambers of commerce and others joining in, and meetings were held all over the country. The Government later raised the fee from five shillings to seven shillings and sixpence ("the B.M.A. sold their soul for thirty pieces of copper") and twelve shillings and sixpence for night and Sunday calls, and also left it open for patients to enter into any private arrangements they liked with doctors. In this form the proposal became law in September as an amendment to the *Social Security Act*, the inauguration of the service being postponed from October 1 to November 1, 1941.

The service thus begun has been in operation over five years. The extra demands of a "free" service on a medical strength depleted by war service enhanced the difficulties. Confusion occurs because of the five different methods of remuneration available:

1. A salaried whole-time service exists in a few rural areas.
2. The capitation payment persists with those doctors who undertook it in the first place. They prefer it to the later methods.
3. The fee-for-service or "direct claim" system—that intended by the Government to be the standard, but opposed officially by the Branch—is freely used. Here the patient signs a form saying that service has been rendered, and the doctor sends a heap of forms to the Health Department each month, and receives seven shillings and sixpence per service. This is simple and labour-saving to both patient and doctor, and has gradually been adopted by many doctors in spite of Branch advice.
4. The "refund system" whereby the patient pays the doctor his fee—usually ten shillings and sixpence as formerly—gets a receipt which he then takes to the post office, and gets a refund of seven shillings and sixpence.
5. The "token system" whereby the patient pays a "token" fee—usually three shillings—and signs the form as in (3) as well, the doctor collecting as in (3).

The Branch approves of (4) but not of (3) and (5). In practice, however, simplicity and convenience tend towards the greater use of (3). The Branch would like to see the Government make only one form—preferably (4)—applicable, and the Government seems anxious to simplify matters.

There has been little alteration in the scheme of general medical services since its inauguration. The matter was debated at length at the first post-war conference of the Branch in February, 1946, and though there were many indications that reforms of the system were to be undertaken by the Government, nothing has yet been done.

Specialist Services.

Specialist services have not been provided, but a rebate of seven shillings and sixpence is allowed off a specialist's account for each time he has seen the patient. This places a troublesome duty on the specialist of recording and reproducing on his account the dates of all such occasions.

Dental Benefits.

Dental benefits under social security were inaugurated on February 1, 1947. They apply chiefly to children from about ten to sixteen years of age, thus extending the work of the school dental clinics which have been operating for many years. The new benefit will be available through private practitioners or dental hospitals on a fee-for-service basis at an agreed scale. It has the support of the New Zealand Dental Association. Later a number of dental clinics are to be established by the Government and staffed by salaried dentists.

District Nursing Services.

District nursing services were commenced in September, 1944, and have proved a boon to many people and a great help to the hospitals. There is scope for great development here, especially if linked to health centres.

Laboratory Services.

Laboratory services were inaugurated in 1946. The Social Security Fund pays a private pathologist, or a hospital board in the case of a hospital laboratory, the full cost of ordinary investigations. No payment is made to a board in respect of in-patients. This provision has been beneficial to patients and to the public interest, but, as in the case of radiological and other services, there are not nearly enough pathologists and laboratories in the country to do the work. In their case, however, some protection is afforded by the fact that the work must be requisitioned by a doctor, who is usually aware of the position. Certain physicians who employ technicians to carry out laboratory work for their own patients have not yet been able to secure help under this heading to maintain what is at the same time a high-class and useful service, and also a costly one. Particularly under the present conditions of cramped space and inadequate facilities, does this denial run counter to the general interest.

Financial Aspects of Social Security Legislation.

It is difficult to present anything very concrete under the heading of financial aspects. The benefits have been introduced piecemeal, and are not yet complete in number nor in applicability. They were introduced in wartime when there were gross limitations by way of men, materials and conveniences to render the various services, and when "prosperity" in terms of high wages and no unemployment was high. Alongside these factors has come a steep increase in costs of services, buildings and consumers' goods of all kinds.

At the end of chapter two in "Health Reform in New Zealand" is reproduced a selection of figures relating to the costs of social security. They may well be left to speak for themselves, but a few observations will be added:

1. Under heading (2), the astonishing fact that the annual cost per head for medicines (thirteen shillings and sixpence—and apparently still rising) is almost as much as that (sixteen shillings and tenpence halfpenny) for general medical services. The total annual cost per head of all these medical benefits is three pounds five shillings and fivepence; this figure will be increased further when specialist and full laboratory, dental, and other benefits are made available.

2. Under headings (3) and (4) an attempt was made, as far as was possible from published official figures, to judge how far the social security charges were taking us in providing all the benefits. In 1945-1946 £7,000,000 had to be added from the Consolidated Fund, but a little over two shillings in the pound on wages, *et cetera*, would appear to have met all charges.

3. In the estimates for 1946-1947, however (heading (6)), a vastly different situation is forecast, where, in spite of increasing the revenue from one shilling to one shilling and sixpence in the pound, not £7,000,000 but £18,000,000 were to be transferred from the Consolidated Fund. A substantial reason for this was the £10,000,000 increase in family benefits, but even that sum is expected to rise steadily for a period of years. The estimates for 1946-1947 therefore would have been met out of social security charges alone only if they had reached almost three shillings in the pound.

4. The urgent need for revision of the whole scheme in the interests of economy and effectiveness is emphasized by the following facts: (*a*) The high and rapidly rising portion of the total income of the country being spent on social security benefits. In 1945-1946, £31,000,000 out of £79,000,000 (ordinary revenue *plus* social security revenue) was spent, whereas in the estimates for 1946-1947 it was £35,000,000 out of £100,000,000. (*b*) Hospital building costs have risen steeply in the last few years. This has caught the country at a most unfortunate time, because the war found us ten years in arrears owing to the depression, and very little has been added during the war except the military buildings, some of which were temporary, and others unsuitable for civil hospital use. (c) A considerable building programme is necessary to provide health centres throughout the country. (*d*) The yield of the social security charge on wages, even as increased in 1946, covers scarcely half the present cost of the benefits. It is a considerable burden, particularly on the wage-earner, though at the moment it is "yielding" well. The time may come, however, when the yield will be a great deal less. The burden on the Consolidated Fund would then have to be increased still further, or benefits curtailed.

Comments on Medical Benefits.

The first few years of the "medical benefits" scheme under wartime conditions have now been supplemented by two years of "peace". Demobilization has been nearly completed, and as far as numbers of medical men and women in practice go, regular conditions have been reached. Neither the people nor the doctors, however, have settled down to present arrangements as permanent, though that process—for want of anything better—is steadily taking place.

The doctors have rapidly become extraordinarily prosperous. It is comparatively easy to work up a good income almost anywhere, except perhaps in rural districts where a lot of travelling is still necessary. Actual figures of doctors' incomes are not published, but some which are almost fantastic are commonly mentioned in Parliament. The highest rewards are obtainable under a company arrangement, where the principal can pay handsome salaries to juniors and still reap rich rewards. The individual man can make a big income by dint of hard work and organization. Taxation of course remains high, and no doubt the doctors' taxes contribute richly to the millions that have to be taken from the Consolidated Fund to subsidize the Social Security Fund.

From the government point of view, the serious drawback is the unlimited liability. The fund has to be a bottomless pit. In 1942-1943 medical benefits cost £1,016,053, and this figure increased each year to £1,427,309 in 1945-1946.

The chief, and perhaps the only, advantage to the people is that they have the right to call on medical attention as and when required, the cost being wholly, or at worst mostly, met by the Social Security Fund. Wartime difficulties in "first catching your doctor" are now less marked, but in spite of a nearly 50% increase in medical personnel since the war, it is still difficult to secure prompt and continuous attention.

From the doctor's point of view, perhaps it is a good thing that by ordinary effort he can secure very adequate rewards. Many doctors approve of the arrangements for this reason, and because they disturb former methods of practice very little. Yet all are aware of certain serious difficulties. The emphasis is placed (fee-per-service) on the number of acts done rather than on quality. Indeed we find the doctor personally doing a number of trifling things in his practice that ought to be done by a nurse or secretary, but are not so done because it is worth seven shillings and sixpence a time to the doctor if he does them.

The distribution of doctors under present arrangements is interesting. The poor man's cough is now as profitable as the rich man's, and certain areas both urban and rural formerly poorly served have now medical men on the spot. So far so good, but a further effect is to concentrate medical men in the cities as against country districts where the travelling is greater, and where social amenities are fewer. Moreover, as between general practice on the one hand, and specialist, scientific and teaching work on the other, there is a disproportionate attraction to the former. The pathologists, radiologists, hygienists and teachers in the profession are almost all maintained by salary, and are the Cinderellas in a financial sense. The genuine specialist who still has private practice to look to is more fortunate, but, for a variety of reasons discussed elsewhere, he is steadily reaching a similar condition. Recruitment to their ranks is difficult in the face of the unnaturally swollen rewards of general practice.

The quality of service rendered under general practice suffers under the "fee-per-service" structure, with its emphasis on quantity rather than quality. The tendency inevitably is towards quick superficial work, and the avoidance of difficult subjects, times, and places. Notable exceptions to this generalization occur, of course. The patient in genuine need of help at night or during a holiday is too often at a serious disadvantage. The hospitals

become the repository of many duties that should be done by the practitioner. They cannot refuse to do them, but they are often poorly equipped in many ways to do so.

Perhaps the worst feature of the present arrangements for general practice lies in the assumption that the style and scope of general practice as we knew it before 1940 were good and left nothing to be desired. Only make it universally available and all would be well! The truth is that many of us had become more than doubtful of this proposition, and were trying to wean both people and doctors away from their addiction to the old style and methods with their inevitable bottle of medicine. Far from helping this endeavour, the *Social Security Act* has confirmed the old methods, and entrenched their already vested interests with richer rewards than ever. The demoralization of the profession has proceeded steadily, and it is becoming harder to fight a way out. When the inevitable recriminations begin, and a once "noble" profession is pilloried for its mercenary attitudes, we must in fairness remember that it did not conceive nor initiate the present scheme. It may have failed to propose an acceptable one which was better, it may have meretriciously connived at it when established, but it did not lay the bad egg.

General Observations on New Zealand Experience in Relation to the Future.

Full credit must be given to the Labour Government for being the first in New Zealand and in the Empire to establish the principle of the public responsibility for all health services, and to formulate a universal free service based on a special social security tax. Whatever we think of the quality of the service, the principle is established and seems to be disputed seriously by no one. The National Party, for example, in its election propaganda in 1946, did not suggest any major restriction or even alteration in the scheme. In this respect New Zealand has lived up to her early tradition of social reform. Whether we like it or not, the principle has been accepted here and in Britain, and seems likely to be so also in the United States of America, Canada and Australia.

The impetus was a political one, doubtless humanitarian as well, and the conception of the details of the service also was almost 100% political—few medical men appear to have been consulted as such. The medical officials of the Health Department deny to this day any share in the paternity, and the profession as organized has been against almost everything that has been done, though it has come to accept a good deal of it with some satisfaction. This underlying conflict, which has not yet been resolved, is the cause of the many obvious defects and failures of the service, whether looked at from the point of view of the ordinary citizen or from that of the progress of medicine.

This process of action and reaction may be inescapable in human affairs—certainly we see it going on on a larger scale in many departments of life. But one cannot help wondering if there is not some better way. For the object is a good one and is contested by no one—the provision of the best health service possible for everyone within the resources of the country, and the furtherance of the art of medicine. There is no reason why it should not be pursued—indeed every reason why it should—outside the political sphere altogether. The professional groups with their inside knowledge of what could be done, and the political section with its desire to serve the people and to implement such plans, should be united, and if so would be irresistible. The measure of the divergence of viewpoint between the two groups is the measure of our failure as an intelligent society.

It may be objected that this is counsel of perfection, that human beings cannot behave in such a reasonable way. That we must do so, or run the risk of catastrophe, is becoming plain in the international sphere. In our smaller domestic, urban, professional, and national spheres, the same lesson has to be learned, and as I see it, is being learned. As Joseph Needham, the Cambridge biologist, says,

> But we are not as men without hope, for just as the greater number of ontogenies (individuals) safely achieve their triumphant ends, so biological and social evolution, in spite of many grave setbacks, give us the right to look forward with confidence to the Regnum Dei of man's full stature.

Real progress, in New Zealand, will therefore not be made until all parties come to direct their thoughts and actions towards this truly social end. Many revisions of opinion will have to take place on all sides. If they do not, and the present rigid and conflicting ideas persist, we will have plenty of action and reaction, but little betterment. The same applies in other countries. It would be better to withhold action altogether for some years, and to concentrate on educational measures, rather than plunge into a violent course of action primarily for political or other one-sided ends. It might be said that unless the political action had been taken in New Zealand, the professional side would never have made a move. There is some truth in that, but it is not the whole truth.

Educational effort, therefore, seems to me to be the only truly worthwhile one—education of both "politico" and "medico", and of the people as a whole, as to what can be done. As far as New Zealand goes, the first thing seems to be a full inquiry into all aspects of the problem, for there has never been any competent planning of any section, let alone the whole. After that there would be a stage of conference between political and professional sides, and I see no reason at all why a workable plan should not be agreed on. The people—admittedly in a vague way—are very dissatisfied, and I believe a worthy solution would be hailed with relief. In such negotiation, I believe in gaining and holding the initiative, and would like to see the professional side do this—not in the vain hope of securing special advantages, but in fulfilment of their palpable duty as experts to the community.

In the long run the thing comes down to attitudes, and I would plead for a vigorous and constructive attitude on our part, both in New Zealand and in Australia. *The Lancet* recently posed this situation editorially in a way that pleased me, in referring to the negotiations in 1946 between the British Minister of Health and the British Medical Association:

> Everyone who understands this conflict will recognize that honest and intelligent people can hold opposite views about it. To some it is natural to emphasize risks, to others opportunity. For our own part we see in the new service a chance of realizing great aims. All forms of organization are alarming and may be dangerous to freedom; but those who concentrate on the dangers of standardization and regulation forget the strength of the English genius for liberty, inequality and multiformity. They forget, too, the inherent strength of our own calling.

I associate myself fully with that attitude, as my main feeling for years has been that as a profession we have the golden age before us in contributing to human welfare, and that properly seized the present is a time of opportunity for casting off old shackles and freeing us for the effort. Lord Horder put it better than I can recently in New York; and I will leave the last word to him:

> If, finally, any one of you should ask me, point-blank, "Do you see hope in the future of medicine?", I should reply: "Yes—I see more hope for ourselves as doctors and for the people who will come under our care in the future of medicine than perhaps in any other single thing in the new world towards which we are hacking our way. We at least have not—yet—forfeited the trust of people for whom we work; we at least have not—yet—turned inwards in despair, bartering our spirit of adventure for a mere hope of security. We stand for sane knowledge, selflessness and mercy in a world gone mad. We cannot let these people down who trust our profession, and it is in this firm resolve that we shall face the future of medicine."

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UNRESOLVED PNEUMONIA.[1]

By IAN COLLINS,
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UNRESOLVED PNEUMONIA is the clinical condition resulting from delayed resolution of lobar pneumonia. It comprises delayed resolution without toxæmia, or secondarily chronic inflammation.

The exact ætiology is unknown. In a large proportion of cases there is a constitutional debilitating factor. Moore,[5] in a study of 1,400 cases of pneumonia at Los Angeles, lists these factors. In pulmonary tuberculosis the complication rate was found to be higher than among non-tuberculous patients. This finding was associated with a lower febrile and leucocytic response than in the controls. Similar findings were present in pneumonokoniosis. Other factors producing an increased complication rate were syphilis,[5][6] decompensated cardiac and chronic rheumatic valvular disease, severe diabetes, hepatic disease, renal disease, and pregnancy, especially if abortion was produced. There was no increased complication rate in recurrent pneumonia, bronchiectasis or asthma. Alcoholism produced a higher death rate, but not a higher complication rate.

Pathology.

Lobar pneumonia is normally terminated by the overcoming of the pneumococci by the body's immunity mechanism, and by the liquefaction and absorption of the exudate. Restoration of the lung to its normal state takes a variable time, but is usually well advanced within a fortnight.[2] Resolution is more rapid if preceded by crisis than if preceded by lysis.[4] The fibrinous exudate is dissolved by proteolytic ferments probably derived from disintegrating leucocytes. It has been suggested that the increased acidity produced by the growth of pneumococci not only kills the organism but leads to autolysis of the exudate.[1]

In about 4% of cases this process is greatly delayed. The reason for this is not clearly understood. Meakins suggests that in some cases the delay is produced by local pulmonary collapse, associated with massive pulmonary collapse at the height of the disease.[3] This state of unresolved pneumonia lasts several weeks to several months, when resolution takes place. Occasionally, however, organization of the exudate occurs, leading to a condition of pulmonary fibrosis resembling chronic fibroid tuberculosis.[1]

Clinical Features.

There are two types of unresolved pneumonia. In the first type, the temperature falls by crisis or responds rapidly to chemotherapy. However, the signs in the chest persist. These comprise dulness, bronchial breathing or diminished breath sounds, and râles. These signs disappear at the onset of resolution. This type of case is rare. The commoner type is chronic pneumonia. The temperature falls by lysis, and the local signs remain. These are accompanied by slight irregular fever, occasional sweats, and rapid pulse rate.

X-ray examination confirms the diagnosis, and is of considerable use in assessing the progress and in revealing other complications. Empyema, especially of the interlobar type, is frequently mistaken for or masked by unresolved pneumonia. Frequently small empyemata or pulmonary abscesses accompanying unresolved pneumonia are detected radiographically and found to resolve together with the consolidation. Occasionally the condition terminates in fibrosis, which is frequently accompanied by permanent collapse of the affected area.[7] These features may be further illustrated by the following cases.

CASE I.—On October 30, 1946, A.F., a male patient, aged forty years, was admitted to the Royal Prince Alfred Hospital suffering from a cough, pain in the chest and fever, of ten days' duration. Since his discharge from the army in 1944 he had been well, except for frequent night sweats. Ten days before his admission to hospital he had felt rather shivery in bed during one of these night sweats, and also developed pain in the lumbar region. This was not accompanied by any urinary symptoms, and passed off after a few hours. Next day he had another "chill", became feverish and went to bed. On the following day he developed a cough, with greyish mucoid sputum. This was still present on his admission to hospital, though not so severely as previously. At the same time he suffered from pain in the lower left part of the chest and the left hypochondrium, worse on breathing or coughing, and relieved by expectoration of sputum. This pain remained for only a short time, and was followed by substernal pain only present when the patient took a deep breath. For three days before his admission to hospital he had been taking two tablets of sulphadiazine every four hours, and felt much better when admitted to hospital. There was no history of hæmoptysis or of any other symptoms. The previous health and the family history were normal.

On examination, the patient was seen to be a well-nourished man, with slightly cyanosed lips and ears. His respiration was rapid, but not distressed, and occasionally he coughed and expectorated thick sputum. Movement was diminished over the left half of the chest, and diminished vocal fremitus and a dull percussion note were present over the lower lobe of the left lung. The breath sounds at that area were highly pitched and bronchial. Increased vocal resonance, ægophony and whispering pectoriloquy were observed over the lower lobe of the left lung, and inspiratory fine râles were present over the affected area. The remainder of the chest was clear. The trachea was in the mid-line position, and the apex beat was in the fifth left intercostal space three and a half inches from the mid-line. The blood pressure was 95 millimetres of mercury, systolic, and 65 millimetres, diastolic. No other abnormality was detected.

A full blood count on the patient's admission to hospital showed that the leucocytes numbered 11,100 per cubic millimetre, 89% being neutrophile cells. The hæmoglobin value was 88%. The sputum contained scanty pus cells and a moderate number of lymphocytes. No tubercle bacilli were detected. Culture produced a profuse growth of *Streptococcus viridans* and occasional hæmolytic staphylococci. A plain X-ray film of the patient's chest on his admission to hospital revealed complete opacity in the left side. A Bucky X-ray film revealed considerable infiltration of the underlying lung, the appearances being consistent with an old and chronic tuberculous lesion.

After three days the patient felt much better, and the sulphadiazine treatment was suspended. After the fourth day the temperature, which previously had been mildly and irregularly elevated, became normal. The signs in the chest, however, have persisted, though the area involved has diminished. Examination on November 26 revealed dulness and bronchial breathing medial to the inferior angle of the left scapula, with bronchophony and fine inspiratory râles. A white cell count performed on October 7 showed that the leucocytes numbered 8,000 per cubic millimetre, 54% being neutrophile cells. X-ray films taken on October 8 and 18 revealed gradual improvement, but consolidation was still present. The patient is now symptomless, and has felt perfectly well for the last fortnight. The latest X-ray report on November 27 states that there is no underlying tuberculous cause for the consolidation.

CASE II.—A.G., a male patient, aged sixty-seven years, was admitted to the Royal Prince Alfred Hospital on June 24, 1946, suffering from breathlessness and pain in the chest of one week's duration. The patient had been in his usual health until one week before his admission to hospital. He then rapidly developed aching pain in the left side of the chest, extending to the axilla and shoulder, but not to the sternum. The pain was not severe, and was not accompanied by faintness or vomiting. It persisted till the next morning, when the patient became breathless. After that he suffered from an ache in the left half of the chest, accompanied by more breathlessness than usual. For some months the patient had suffered from pharyngitis, and had coughed occasionally. In the week before his admission to hospital the cough had been worse, and the patient had been spitting up small quantities of watery sputum resembling saliva, with streaks of blood in it. Apart from palpitation and mild breathlessness on exertion, the patient had no cardiovascular symptoms. He had a previous history of three attacks of rheumatic fever when young.

On examination, the patient was seen to be an elderly man in a breathless condition; *herpes labialis* was present. Examination of the chest revealed diminished movement on the left side. No obvious areas of dulness were present. In the left infra-axillary region the breath sounds were absent, and fine crepitations and a friction rub were present. Faint harsh vesicular breath sounds were present at all

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on November 28, 1946.

other areas, accompanied by coarse rhonchi, especially at the hilar regions and lung bases. The trachea was mid-line in position, and the apex beat was in the fifth left intercostal space, four and a half inches from the mid-line. Apart from frequent dropped beats, no other abnormality was present in the circulatory system.

On his admission to hospital the patient had a temperature of 101° F., and penicillin therapy was commenced. On the following day the chest signs had changed. Dulness and absence of breath were observed at the base of the left lung, and dulness with diminished breath sounds in the left axilla. Crepitations were present in the lower part of the left axillary region of the chest. A full blood count showed that the leucocytes numbered 17,200 per cubic millimetre and the hæmoglobin value was 82%. A film taken with a portable X-ray machine revealed consolidation of the whole of the left lung, and patchy consolidation at the base of the right lung. Culture of the sputum produced a scanty growth of non-hæmolytic streptococci.

After eight days the patient still had an irregular swinging temperature between 98° and 101° F., so penicillin therapy was suspended and sulphadiazine given. The temperature subsided, and the sulphadiazine treatment was suspended on July 8. On July 12 a mild elevation of temperature occurred and a friction rub developed at the base of the right lung. Sulphadiazine treatment was recommenced. By July 18 the temperature was again normal, and chemotherapy was again suspended.

On July 22 a plain X-ray film of the chest revealed dulness of the whole of the left lung from apex to base, with displacement of the mediastinum to the left. The right lung was clear. The patient was confined to bed, and diathermy was applied to the left half of the chest for half an hour daily.

On August 15 a plain X-ray film revealed an improvement in the appearances on the left side, but an area of infiltration was present in the lower lobe of the right lung. The appearances in the left apex were suggestive of tuberculosis. By this time the patient felt well, the diathermy had been suspended and he was allowed up. He was discharged from hospital on September 19. On September 23 a follow-up X-ray examination revealed an area of fibrosis extending from the left hilum to just below the left clavicle. The appearances were slightly better than previously, but the lung in the left subclavicular region did not reach the lateral wall of the chest. This was reported as probably due to thickened pleura supervening upon some encysted fluid in this region. The pulmonary fibrosis was considered to be of simple inflammatory origin; but the possibility of an underlying tuberculous element could not be completely excluded. The right lung field appeared clear. On October 29 these changes were present to a lesser degree.

The latest X-ray examination (October 30) revealed some residual collapse in the upper area of the left lung and some fibrosis extending upwards and outwards from the left hilum. All consolidation had disappeared.

Diagnosis.

Unresolved pneumonia is diagnosed by a history of pneumonia and by the presence of the signs listed above, and is confirmed radiologically. Several conditions must be distinguished from unresolved pneumonia.

1. In empyema there is continuance of toxæmia, together with dulness and absence of breath sounds at the affected area. Râles may be present from surrounding pneumonitis. Empyema may be distinguished by pleural aspiration and radiographically.

2. Pleurisy with effusion may be preceded by a history of a chill and pleuritic pain, and clinically may resemble unresolved pneumonia. Usually the dulness, absence of breath sounds and displacement of the mediastinum provide the diagnosis. Occasionally doubt arises when loud bronchial breathing is transmitted through the fluid. In such cases detection of mediastinal displacement and aspiration of fluid together with X-ray confirmation are necessary.

3. Tuberculous lobar pneumonia in its early stages closely resembles unresolved pneumonia. The presence of dulness, bronchial breathing and râles is common to both. However, in tuberculous pneumonia severe toxæmia is present, with a hectic temperature and considerable wasting. The sputum contains tubercle bacilli and later elastic fibres, whereas in pneumococcal pneumonia no lung destruction takes place. Tuberculous pneumonia is usually fatal within several months.

4. Bronchogenic carcinoma is not infrequently mistaken for unresolved pneumonia. Stridor and the presence of pressure on the great veins may provide the diagnosis. However, the bronchial obstruction may be complete, producing a local area of pulmonary collapse. In such cases radiological methods are necessary to reach a diagnosis.

Prognosis.

The prognosis in unresolved pneumonia is fair. Recovery from the original pneumonia is almost certain, since the pneumococci have been or are being overcome. The presence of general debilitating factors, such as active tuberculosis or chronic nephritis, is to be feared, as also is the masking of other local pulmonary complications such as empyema.

Treatment.

Treatment consists in keeping the patient in bed while gross physical or radiographic signs persist. Chemotherapy is employed if pyrexia is present. Diathermy to the chest is considered helpful in refractory cases. Other points in treatment comprise iron therapy to combat anæmia, a diet rich in vitamins, and general nursing care.

Acknowledgements.

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THOUGHTS ON REFRACTION.

By E. TEMPLE SMITH,
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As refraction bulks so largely in the work of the oculist, it merits perhaps more consideration than it usually gets.

First, let us define our terms. Refraction, in the sense in which we colloquially use it, does not mean the bending of rays of light, but estimation of the refractive power of the eye and its correction with lenses. A cycloplegic is a drug which puts out of action the muscle used to focus all objects nearer than infinity. In other words, it paralyses the accommodation. It is commonly known as "H. and C." (homatropine and cocaine). A mydriatic is a drug which enlarges the pupil, leaving accommodation unaffected.

Now in my view the use of cycloplegics is much abused in refraction examination. They should never be used as a routine measure, but only when indicated. What are the indications?

1. Cycloplegics should be used always in the refractive examination of young children. Not only is a subjective examination a very chancy thing in the case of a child, but also a retinoscopy without the use of a cycloplegic will be misleading except as a rough guide, owing to the amazing faculty the child has for suppressing hypermetropia by using his powerful ciliary muscle. In the refractive

examination of older children a careful subjective test both before and after the cycloplegic has been instilled is desirable. For children atropine is used.

2. Cycloplegics are required in the refractive examination of young adults if during the subjective examination one suspects ciliary spasm. (One meets with this only in young adults.) This is rare, but is easily detected by the experienced practitioner.

I know no other indication for the use of cycloplegics. In the examination of adults the use of a cycloplegic gives no information that is not more easily obtained without it. In the examination of adults of presbyopic age its use seems to me simply ridiculous. There are few adults of whose disk and fundus one cannot obtain a reasonable view, and in whose examination one cannot carry out retinoscopy with complete accuracy by directing the patient to look at one's forehead, or, as has been suggested by Sherne,[1] at a red glass crystal (like that used on a bicycle) placed on the wall behind the observer.

Of course this result is checked subjectively by putting up the appropriate lenses and correcting one's errors of observation if necessary.

Where one cannot obtain a good reflex for retinoscopy or a satisfactory subjective correction, and when the vision is "below par" and the pupil too small to enable one to see the fundus, and no obvious cause such as a corneal nebula can be seen, should one use a cycloplegic? No; a mydriatic is indicated. The one I use is a mixture of cocaine and adrenaline, followed in a few minutes by "Neo-Synephrine". In ten minutes the pupil will dilate to a useful size. Retinoscopy is now possible, or the cause of the obscurity will be found—lens sclerosis, vitreous opacity, or fundus disease—and this without condemning the patient to twelve hours or so of discomfort.

The use of a cycloplegic necessitates two or three visits before the refractive examination can be completed. This may mean (but one ventures to hope not) extra fees, and certainly loss of time as well as annoyance to the business man. An example of another class of adult for whom the use of a cycloplegic is futile is the young woman with vague symptoms of discomfort and visual acuity of $^6/_5$. If retinoscopy does not immediately disclose astigmatism, or even if it does, fogging with convex lenses and the use of the orthops chart or similar device will quickly eliminate a diagnosis of ciliary spasm, and will define the possible quarter of a diopter of astigmatism which is present. Whether that is to be corrected or whether heterophoria or something else is the cause of the discomfort is beside the point. The complete dilatation of the pupil in the presence of these small errors is a source of annoyance and confusion to the observer, as it gives conflicting reflexes from the peripheral areas of the cornea which are not of importance in the refractive examination of the central area.

Let me give one or two examples.

A man, aged fifty-five years, complains that his reading glasses are inefficient. His unaided visual acuity is $^6/_9$ or $^6/_9$ partly in each eye. Retinoscopy reveals half a diopter of vertical astigmatism in each. With each lens he has $^6/_5$ visual acuity in each eye, and he will not tolerate a quarter diopter sphere more or less. One varies the position of each cylinder 15° each way to check the angle. One adds two and a quarter diopters for reading. One can see the disk, healthy and prominent; the vessels are normal, the macular region is free from hæmorrhages or retinitis (it is hardly likely to be otherwise with $^6/_5$ visual acuity). The tension is normal, there are no symptoms, and no material heterophoria.

What possible reason or excuse is there for submitting this poor man to instillation of a cycloplegic, a long wait, and another visit? Will this procedure give any more information? It is possible that he may have a small and early neoplasm near the *ora serrata*; the chance is 1 in 10,000,000. I think that possibility may be ignored. Still, if one feels that his *ora serrata* must be examined, a mydriatic may be used and the examination made after the refraction has been investigated.

There can be no objection to the use of mydriatics whenever they are needed for further investigation. It is only the rule of thumb use of cycloplegics without rhyme or reason, to the inconvenience of everyone concerned, that I am deprecating. I would here emphasize that I am not referring to other kinds of investigation, such as scotometry, perimetry, tonometry or the use of the slit-lamp, any or all of which may be demanded by some definite indication. I am at the moment dealing only with refraction and cycloplegics.

Here is another case.

Yesterday I examined a man, aged sixty years, who had failing vision. The visual acuity was $^6/_{24}$ in one eye and $^6/_{36}$ in the other. He noticed no improvement on the exhibition of any lens. Retinoscopy was easy and revealed myopic astigmatism. Very little improvement in vision occurred. The optic disks were well seen; they were healthy, the tension was normal, the media were clear, the macular region was rather doubtful, and no paracentral colour scotoma was present. The use of a mydriatic (not a cycloplegic) enabled me to make out arteriosclerosis and macular degeneration.

A cycloplegic is not needed merely to obtain dilatation of the pupil. The routine and indiscriminate use of cycloplegics is not scientific. It is a fetish. When I try to impress this on my younger colleagues, I receive the pathetic reply: "I was taught that way at Moorfields." Is "Moorfields" the ultimate word? It has even been hinted that the public expects "drops" from an oculist as distinct from an optometrist. I decline to subscribe to this idea. If I had not the moral courage to do my work in the way in which I know I can get the best results, and if I felt it necessary to pander to the patients' views (which I do not), I should instil normal saline solution into the eyes, in the knowledge that this would not hamper me, as I know the cycloplegic would, but would satisfy the patient. If a patient says, in effect, "Wot, no drops?", I reply: "Madam, that went out of fashion with the bustle." The average refraction examination is neither difficult nor esoteric; it is perfectly simple.

Here is another fad of mine. It is the usual practice in making a retinoscopic examination to put down on the record the number of the lens with which one got the "point of reversal"; for example: "+ 3 (horizontal) and + 4 (vertical)". From this, to obtain the correct refraction, one has mentally to subtract one diopter from that number if one works at a distance of one metre, and a varying amount if one works nearer or further from the trial frame. I usually aim at one metre; but this is not necessarily the practice of another observer. Hence the foregoing figures do not represent any absolute value whatever, but really need to be qualified by the words "at one metre", in parentheses, to be of any use as a record. Why not mentally subtract the one metre (or whatever is necessary) and record the finding thus, for example: + 2 (horizontal) and + 3 (vertical)? That is the manifest refraction. If no cycloplegic is used, it stands. If a cycloplegic has been used, these figures represent the static refraction, and a variable amount has to be deducted to allow for the action of the cycloplegic. Why make a double deduction? Surely anything that simplifies and clarifies the problem is an advantage, and, in any case, such a record states a fact. No one is interested in how it is reached. I have always insisted on this method of notation in my hospitals; but it was always reluctantly complied with and I think avoided whenever possible. They were "taught the other way at Moorfields". The point may be academic, but the method is certainly more precise and is of absolute instead of only relative value as a record.

W. G. Sym,[2] of the Royal Infirmary, some forty years ago was the leading ophthalmic surgeon in Edinburgh. He was in the line of succession from Sir George Berry, and a predecessor of Sinclair and Traquhair of the present day. He edited the *Ophthalmic Review*, which was at the time the only British ophthalmic journal, and which preceded *The Ophthalmoscope* and *The British Journal of Ophthalmology*. I recently came across this passage written by him in the *Ophthalmic Review* in 1907:

> I am in the constant custom of using retinoscopy without a mydriatic in all classes of cases (except where special circumstances demand the use of a cycloplegic), and from my experience of this plan I am sure that if those surgeons who constantly dilate the pupils would try it they would be astonished at its accuracy—

an accuracy which has in multitudes of both young and adult patients enabled me to correct the refraction down even to an eighth of a diopter, and that when astigmatism is present. As the method, too, enables me to dispense with a second visit of the patient and avoid the annoyance caused by the cycloplegic, it saves much time to both persons and is highly appreciated by the patient.

To come to more modern times, Sherne,[1] of Leeds, wrote as follows in *The British Journal of Ophthalmology* in 1938:

I now do the majority of refractions without a mydriatic, as I feel that under proper conditions it is the most accurate method.

There may be a certain publicity value in having one's waiting room filled with a crowd of women with their handkerchiefs held before their closed eyes, instead of a comparatively empty room from which the refraction patients are dispatched at intervals of about a quarter of an hour. But motives of this kind are unworthy of the consideration of the scientific worker. Nor do I wish to suggest that this aspect has any weight with others. The reason is more likely to be what James Joyce, using an Anglo-Saxon phrase, terms *"agenbite of inwit"*, the prick of conscience, or, even more likely, want of clear thinking.

Was it not Carlyle who said, "let us clear our minds of cant"? I think that if the routine users of cycloplegics could disabuse their minds of the notion that, if they do not use a cycloplegic, they are not being conscientious and are scamping their work, they might possibly view the subject in its true perspective, and be induced to apply the cold light of reason and criticism to the methods they were taught in their (medical) infancy.

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RADIUM THERAPY OF RECURRING NASAL POLYPOSIS.

By J. PARKES FINDLAY,
Sydney.

RADIUM THERAPY of recurring nasal polyposis is not a new method of treatment. Lyons, of the Mayo Clinic, in 1922 reported some cases, and a series of cases was recorded in the *Eye, Ear, Nose and Throat Monthly* of April, 1935, page 92. The only English author to publish cases is Scott-Brown[1] in 1936, and he also reported a follow-up series of 40 cases in 1938.[2] (This author does not give the *r* unit.) His series were quoted by me in my article in 1940.[3]

The present series of cases covers a period from 1939 to 1946 for the purpose of treatment, classification and careful checking to ascertain the results of radium therapy, especially with regard to the safe *r* unit dosage to avoid the risk of bone, cartilage and mucous membrane necrosis. With the exception of four cases, radium was inserted at the time of operation without deleterious results; in these four cases the interval between operation and insertion of radium varied from seven to twenty-eight days. No patients with infection were treated by irradiation until the sinuses were clean, and most patients treated were without infection.

Selection of Cases: Ætiology.

I quote Scott-Brown's classification of ætiology from his article in 1936, as I consider the grouping satisfactory: (i) infective, (ii) allergic, (iii) allergic with secondary infection. But there is another group of patients without infection, not suffering from allergic symptoms or giving skin reactions, but having pronounced deviations of the septum causing pressure on the middle turbinate region. In such cases I classify the condition as mechanical (inflammatory); this makes a fourth group.

Pathology.

Polypi removed from many patients in the series were reported upon by A. D. Gillies, in his article on the histology of nasal polypi.[4] In the allergic cases no great eosinophile formations were found.

Arthur Burrows, of the London Hospital, interested me in the first instance in nasal radium therapy, and after the establishment of the Radium Department at Sydney Hospital, the treatment and technique were evolved with the closest cooperation on the part of Dr. Sylvia Bray, of that department, during the period from 1939 to 1946. Dr. Bray has worked out doses and durations of treatment in all cases, and has been instrumental in obtaining a special nasal applicator for radon. Dr. Bray is publishing all the figures for the Radium Department, Sydney Hospital, for this period, and with me made the follow-up clinical examinations of this series of patients in November, 1946. The series of forty patients in this article are selected from my practice and from my clinic at Sydney Hospital; the ages varied from forty to seventy years, no age group being predominant.

Radium Dosage.

Of this series of 40, 28 patients were treated by radium element, and 12 by radon.

Dosage of Radium Element.

The first group comprises a series of 28 patients, 21 males and seven females. The treatment commenced from November 27, 1939; the patients received the same dosage in 1941, and up to June 4, 1942, one patient only being treated by radon. A lapse in this therapy, due to war service, lasted from June, 1942, to November, 1945.

Two tubes containing 25 milligrammes of radium element screened by 2·0 millimetres of platinum, were fitted into a rubber cot and packed in position for eight hours; the dosage was thus 200 milligramme hours, resulting in a dose of 3,800*r* at the surface and 1,050*r* at a depth of one centimetre in the plane of the tube. This dosage was constant throughout the series in which radium element was used.

The radium tube used had an overall length of 3·0 centimetres, an active length of 2·0 centimetres and a diameter of 5·6 millimetres.

Dosage of Radon.

The series in which radon was used comprised 12 patients, seven males and five females, and the period covered was 1945–1946. Two 25 millicurie nasal applicators screened by one millimetre of platinum were left *in situ* for seven hours 49 minutes, giving a dose of 3,500*r* at the surface. This is the average dosage in the present series.

The special radon applicator has an overall length of 20 centimetres, an active length of 3·5 centimetres, a diameter of 0·5 centimetre and one millimetre of platinum for screening. The applicator handle or carrier is malleable and adjustable by bending to conform with nasal anatomy. The active part or container is sweated on to the end of the malleable applicator handle.

Operative Technique and Insertion of Radium.

Operation is carried out and radium is inserted under local anæsthesia with premedication and intravenous therapy.

Anæsthesia.

Premedication consists in the administration of 1·5 grains of "Nembutal" on the night before operation, and of the following drugs according to the surgeon's choice: "Amytal", three grains, 60 to 90 minutes before operation; "Nembutal", three grains, 60 minutes before operation; "Seconal", three grains, 30 minutes before operation.

Local Anæsthesia.—In all cases in which operation was carried out with the surgical technique described, gauze packing was used with a solution of cocaine hydrochloride (10%) and adrenaline (1 in 2,000). In my opinion, this produces satisfactory anæsthesia for this operation. "Decicain" (2% solution) with adrenaline may be used; but I have not found this form of anæsthesia so efficacious.

Ethmoid Region.—It is advisable to repack under the middle turbinate before commencing the septum submucous resection operation. Prior to exenteration of the ethmoid cells after the submucous resection and removal of polypi from one nasal cavity, it is recommended that the ethmoid region be repacked with the anæsthetic gauze; this saves considerable time when this area is approached and produces good anæsthesia.

Intravenous Therapy.—Nervous patients who are restless and apprehensive on the operating table are given heroin. Males who are muscular and of heavy bulk are given from one-eighth to one-sixth of a grain, females from one-twelfth to one-eighth of a grain. This dosage gives excellent results, some patients passing into sleep, and is a well accepted practice.[4][5] The excretory rate from the blood stream by the kidneys is rapid, as there is no subcutaneous reservoir for prolonged absorption; this constitutes a safety factor.

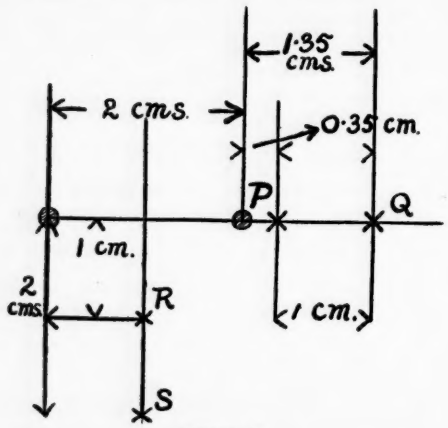

FIGURE I.

Diagrams, showing tubes or containers with dosage rates, in a perpendicular plane through the centre of the tube, with tubes parallel and two centimetres apart in position in the nose. Duration of irradiation, eight hours. P (at the surface), 3,800*r*; Q, 1·0 centimetre distant, 1,050*r*; R, 1·0 centimetre distant, 1,000*r*; S, 2·0 centimetres distant, 440*r*.

Method.—It is advised that the heroin be dissolved in one to two millilitres of normal saline solution in whatever capacity syringe is available. Half the solution is injected into a cubital vein; an interval of two minutes is allowed for the response of the patient to be ascertained; if no signs of idiosyncrasy or respiratory depression appear, the full dose is injected into the vein. Heroin is preferred to morphine, as the latter often leads to a feeling of nausea and vomiting.

Operative Technique.

The maximum amount of space inside the nasal chambers is desirable and necessary for a good visible working field for the removal of nasal polypi and the insertion of radium.

First Stage.—Many patients have deflected septa, some anterior deflections, others high deflections in the region of the middle turbinates. All are obstructive to good vision in the operative area, and it is recommended that a septum submucous resection be performed prior to polypectomy. A careful survey is then carried out and the basal attachments of all polypi are noted. This is particularly important in order to preserve the middle turbinates.

Second Stage.—If possible a large nasal speculum is used for examination in the second stage, and polypi attached to the anterior and inferior borders of the middle turbinates are carefully removed. Growths on the inner (septal) surface present a difficulty, but with care can be removed.

Third Stage.—Polypi attached to the middle meatal surface of the middle turbinates are easily removed, especially after fracture of the middle turbinate towards the mid-line of the nasal cavity. This is a recommended procedure executed without difficulty after submucous resection of the septum, before the attack on the anterior ethmoid region is commenced; excellent exposure of the middle meatus is obtained.

Fourth Stage.—Polypi from the septum are removed; the basal attachments are generally firmer than those of polypi from the middle turbinates or ethmoid region.

Fifth Stage.—The polypi of the superior meatus are removed. The middle turbinate may be grossly involved in the polypoid hyperplasia, or so compressed that it cannot be preserved; in these cases it is removed.

Sixth Stage.—When all polypi have been excised from the areas described above, so that good vision of the operative field is obtained, the ethmoid labyrinth is exposed. All anterior cells which are involved in the polypoid degeneration are exenterated with instruments of the surgeon's choice; the surgeon works continuously backwards till the posterior ethmoid cells are exenterated, carefully preserving the hinged attachment of the middle turbinate to the ethmoid labyrinth. All tags of mucous membrane are removed; ethmoid cells displaced laterally or adjacent to *lamina papyracea* may be curetted with an ethmoid spoon. On completion of this stage of the operation, the operative field is swabbed and carefully inspected; it will be noted that a firm ledge of bone is present, which joins the middle meatal surface of the posterior end of the middle turbinate; above this ledge is a recessed space of the posterior ethmoid cells. When the ledge has been defined, the radium applicator is introduced into position in the ethmoid cavity under the middle turbinate, the distal end being firmly placed on this ledge, irrespective of the type of radon applicator or container; whether tube, needle container or nasal applicator is used, this is the desirable site. The applicator is maintained *in situ* with gauze—preferably bismuth paste gauze. At this stage it is necessary to state the reason for advocating a tube or container which is active at both ends. It is based on the above described anatomical framework, permitting the irradiation of the posterior ethmoid and middle turbinate regions, as the mucous membrane always presents polypoid degeneration. The forward end of the applicator irradiates the anterior ethmoid and middle turbinate areas. The radium applicators are secured outside the nose with adhesive tape, if the introducing part of the applicator is metal. If silk is attached to the container or needles, it is fixed to the cheek with adhesive tape.

Seventh Stage.—At the expiration of the period of irradiation the applicators may be removed without disturbance of the packing in the nose if a submucous resection of the septum has been performed. The duration is usually less than eight hours. The gauze packing is removed at the end of twenty-four hours. (Finger stall packing, *et cetera*, has not been found satisfactory for keeping the radon containers in position.)

Post-Operative Treatment.

On the first day after operation the bismuth gauze is removed from the nasal chambers. On the fourth day the nasal chambers are examined, to free the passages from any blood clot, mucus *et cetera*, and to establish an airway to guard against adhesions. On the fourteenth day a further examination is made as a precautionary measure, to remove adhesions which may have formed during this period. Another examination is made from the twenty-first to the twenty-fifth day, to mark the reaction to radium of the nasal mucous membrane in the region irradiated. A final examination should be made at the end of three months, and a follow-up examination at the end of one year.

Follow-up Investigation of Patients Treated with Radium Element (Series 1939 to 1942): Clinical Examination in November and December, 1946.

There were four recurrences of polypi of a fibromyxomatous nature. No necrosis of cartilage or bone had occurred. The mucous membrane was normal in all

regions; it was slightly paler in the ethmoid labyrinth owing to fibrosis. In the septal area and in the middle turbinate area it was pink.

Allergy with infection was present in one case of polyposis; the patient showed all the signs of nasal allergy; the mucous membrane was pale, œdematous and boggy on both sides. In the right nasal chamber two small, hard fibromata equal to the size of small peas were present anterior to the attachment of the middle turbinate. On the left side one polypus, in a posterior position, was allied to the myxomatous mucoid type. Proof puncture of the antra produced mucopus. No necrosis of bone or cartilage was present. All tests with many pollens produced positive results.

Follow-up Investigation of Patients Treated with Radon (Series 1945 to 1946): Clinical Examination in November and December, 1946.

In this series there was no recurrence of polypi. No necrosis of cartilage or bone was present and the mucous membrane was normal.

Conclusions.

1. Radium therapy offers a safe means of treatment of nasal polypi, and in most cases without infection a cure for them. Any recurrences following treatment are growths of fibromatous type, always small and bud-like. The aim of the therapy is to convert the myxomatous mucoid glandular tissue into fibromyxomatous tissue. The four patients of the 1939-1942 series examined in 1946 showed small fibromyxomata which were readily removed in the clinic.

2. The *r* unit centre surface dosage in both series is safe; no patients showed any signs or symptoms of mucous membrane atrophy or any cartilage or bone necrosis.

3. All the patients, even the four with minor recurrences, have enjoyed good health.

4. The most important factor from the sufferer's viewpoint is the comfort and freedom from the mental anxiety of endless operations.

5. Cases typical of the fourth ætiological grouping were of long-standing and in the advanced age class.

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Reports of Cases.

BILATERAL POLYCYSTIC KIDNEY.

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THE MEDICAL JOURNAL OF AUSTRALIA of August 31, 1946, carries a summary of an article by J. H. Harrison and T. W. Botsford (*The Journal of Urology*, April, 1946) in which they state that men are often accepted into military service without discovery of congenital renal anomalies. These authors hold that symptoms sometimes appear as a result of the exigencies of military service. Excessive physical exertion, trauma, exposure to unusual climatic conditions and intercurrent infections, are contributory factors to the appearance of symptoms. Congenital anomalies of the kidney are numerous and relatively common; but the anomalous organ is more susceptible to disease than the normal organ only if the anomaly interferes with the circulation or the excretory function of the kidney. Many anomalies do not interfere with the functioning of the organ and may not therefore contraindicate full physical activity. Harrison and Botsford further state that severe abnormalities of form and structure, complicated by disturbance of dynamics, superimposed infection, calculus or hæmorrhage, are incompatible with active military service. They analyse 72 cases of congenital renal anomalies.

The following case may be of interest.

Clinical Record.

A patient was admitted to a military hospital on September 2, 1946, complaining of discomfort in his left hypochondrium. He had been for over two years in the Australian Imperial Force, had had commando training, had seen active combat in Borneo, and had also spent some time in Rabaul and Morotai. Four days prior to his admission to hospital, while driving a motor truck, he noticed pains in his left side which did not radiate towards the scrotum or back. The pain was most intense two days after the onset; it subsided three days later, and on his admission to hospital it was more a sensation of discomfort. Both the patient's parents, brothers and sisters were well. There was no diabetes, tuberculosis or kidney disease in the family. The patient had had no previous malaria attacks; he had had no cough or dysuria. His appetite was fair and his bowels were open regularly. His habits were regular; he smoked and drank but little. One day after his admission to hospital he passed strongly blood-stained urine.

On examination, the patient was found to be intelligent and cooperative and of normal physique. His nutrition was good and his colour normal; his skin was clear. His pulse rate was 92 per minute, his respirations numbered 20 per minute, and his blood pressure was 120 millimetres of mercury (systolic) and 80 millimetres (diastolic). The eyes, ears, throat and pharynx were normal. The thyreoid gland appeared normal, and no enlarged lymph glands were detected. On examination of the chest, inspiratory expansion was less on the left side than on the right; vocal fremitus and vocal resonance were less on the left side than on the right. On percussion, the right hemithorax was resonant throughout. In the posterior aspect of the left hemithorax, resonance was decreased in the lower one-third; in the anterior aspect resonance was decreased from the sixth intercostal space downwards. Auscultation revealed vesicular breathing without adventitiæ throughout the right hemithorax. In the left hemithorax air entry was diminished and rhonchi and crepitations were present; a few crackling râles were heard after coughing, corresponding to the dull area. A pleural rub was present. No ægophony and no pectoriloquy were heard. The apex beat of the heart was in the fifth left intercostal space, three inches from the mid-line; the heart sounds were clear and regular, and no murmurs were detected.

On examination of the abdomen, no abnormality was detected in the liver area. The spleen was thought to be palpable. A mass was palpable in the left hypochondrium; it was hard and nodular and moved with inspiration. The lower pole of the mass was palpable three inches below the costal margin. Tenderness was evident on light or deep pressure. No pulsation could be felt.

A provisional diagnosis was made of (i) left hydronephrosis with left pneumonitis and pleurisy with effusion or (ii) hypernephroma with left pleurisy, either infective or inflammatory from extension of the neoplastic process.

A number of investigations were undertaken. Examination of a blood film revealed no malaria parasites. A blood count gave the following information: the erythrocytes numbered 3,000,000 per cubic millimetre and the hæmoglobin value was 12·6 grammes per 100 millilitres; the colour index was 1·1; the leucocytes numbered 12,800 per cubic millimetre, 72% being neutrophile cells, 16·5% lymphocytes, 6% monocytes and 0·5% eosinophile cells.

The blood sedimentation rate was 6·0 millimetres in thirty minutes and 73 millimetres in sixty minutes. A few days later the blood sedimentation rate was 36 millimetres in thirty minutes and 63 millimetres in sixty minutes. With correction for the anæmia the figure after sixty minutes was 56 millimetres. The urine was deep red and acid and yielded an albumin precipitate; it contained a trace of sugar, and the specific gravity was 1·018. On microscopic examination the urine was found to contain numerous erythrocytes and eight to ten leucocytes per high-power field. These findings remained unchanged for some time. X-ray examination of the chest revealed infiltration in the lower third on the left side. Pleurisy was present, but the left side of the diaphragm had been pushed upwards. Thoracentesis was performed and two specimens were withdrawn. The first specimen (two millilitres) came from a puncture in the eighth left intercostal space. The second specimen (about 20 millilitres) was withdrawn after puncture in the ninth left intercostal space. The needle passed through fibrous tissue (the area from which the first specimen was withdrawn was possibly encapsulated). Both specimens of fluid were turbid and blood stained. The specific gravity was 1·024, and the protein content was 8·5 grammes *per centum*. Microscopic examination of the fluid revealed numerous pus cells (more polymorphonuclear cells than lymphocytes), many mononuclear cells and a few erythrocytes; no microorganisms were seen. Ziehl-Neelsen staining failed to reveal acid-fast bacilli. The patient's blood urea level was thirty milligrammes *per centum*. The fluid intake and output are shown in Table I.

TABLE I.

Day.	Fluid Intake. (Ounces.)	Fluid Output. (Ounces.)
1	40	25
2	50	38
3	45	49
4	45	50

A flat X-ray picture of the kidney region and X-ray examination after the administration of "Urapac" revealed that both kidneys were greatly enlarged, the left much more than the right. The appearances suggested polycystic disease of the kidney, but hypernephroma of the left kidney could not be excluded.

The patient was comfortable from the second day after his admission to hospital. He was cooperative and complained very little, except of headache. His legs were not œdematous and his temperature was normal on his admission to hospital. His temperature rose on September 3 to 101° F. and assumed an intermittent character for three days.

Penicillin treatment was begun, massive doses being injected. The intermittent rises in temperature continued for four days, although the acme did not exceed 99·5° F. The reasons for the administration of penicillin were two: (i) to clear up his chest conditions; (ii) to have him prepared for operation, if this was considered advisable. The injections were continued until about 1,500,000 units of penicillin had been given and his temperature had remained normal for four days.

His urine was stained deep red, and the laboratory findings remained practically unchanged.

At this stage, about one week after his admission to hospital, a surgeon was called for consultation; he agreed with the diagnosis of polycystic kidney disease and performed an ascending pyelography. Cystoscopy revealed no bladder abnormality. Catheters were passed into both ureters without any difficulty; no blood was discharged from the right or left ureter. On X-ray examination the left upper renal calyx was elongated and showed a pressure defect. A pressure defect was visible on the pelvis. The X-ray appearance was suggestive of bilateral cystic kidney disease. On the lowermost calyx of the right kidney a slight pressure defect was present.

Throughout the patient's stay in hospital his blood urea level remained normal. No abnormality was detected in the fundi.

The bleeding time and clotting time were normal. The blood sedimentation rate dropped to normal when the temperature dropped. The hæmoglobin value was 11·3 grammes *per centum* on the twentieth day (it had been 12·6 grammes *per centum* in the previous week).

A potassium citrate mixture was given, and also injections of "Thrombine K" were prescribed for a short time. The hæmaturia decreased slowly but steadily. On September 29, 1946, microscopic examination of the urine revealed very few pus cells (two to four per high-power field) and three to five erythrocytes per high-power field. The urine cleared gradually, and the patient was reclassified and discharged from hospital for demobilization.

Comment.

Some authors suggest syringe evacuation of the cysts and injections of sclerosing fluid. As has already been stated, no surgical intervention was deemed necessary in the present case.

Although it appears unavoidable that men should be accepted into military service without discovery of their congenital kidney anomalies, it seemed worth while to draw attention to the fact that these men can perform heavy tasks for long periods without complaining of any particular discomfort.

UNUSUAL EXAMPLES OF "MASSIVE PULMONARY EMBOLISM".

By J. B. CLELAND, M.D.,
Marks Professor of Pathology, University of Adelaide.

THE term "massive pulmonary embolism" is so appropriate and descriptive that I have used it as a heading for this paper, although in two of the cases the embolic clots, though they had reached the heart, had not had an opportunity of entering the pulmonary artery.

Case I: Folded Embolic Clot with Glued Loops in the Right Ventricle.

E.H., a male patient, aged fifty-five years, was admitted to the Royal Adelaide Hospital on September 16, 1946, and died from congestive cardiac failure the same day. Autopsy (number 227/46) revealed great hypertrophy and dilatation of the heart, which weighed 25 ounces (750 grammes), without any valvular or renal cause for such hypertrophy. In the right ventricle was an ante-mortem clot, about three inches (7·5 centimetres) in length, which was bent on itself and somewhat twisted, the folds being glued toegther by recent fibrin. The clot was somewhat moniliform and its surface presented a polished appearance. It had probably come from the right femoral vein, where there were still remains of an ante-mortem clot. There was another clot, one and three-quarter inches (4·1 centimetres) long, in the lower lobe of the right lung, together with a large infarct.

The impression given at the post-mortem examination was that the clot had been detached and had been carried into the right ventricle, where it had become folded on itself; this had caused it to be too big to pass readily into the pulmonary artery, and so it had been retained in the right ventricle sufficiently long for fibrin to be deposited between the strands of the loop (see Figure I). It would have been of interest to know whether any unusual sound had been detected on auscultation of the heart.

Case II: Massive Embolism Astride a Patent Foramen Ovale.

A female patient, M.E.S., suffering from chronic melancholia, was admitted to the Parkside Mental Hospital on February 10, 1939. On May 22 acute cardiac collapse occurred at 5 a.m. and she died half an hour later. At the autopsy (number 476), on opening the right auricle I was

surprised to notice what looked like an embolic ante-mortem clot projecting apparently from one of the orifices of the *vena cava*. However, thinking that it was not possible for such a clot to have remained in this situation, I gave it only a casual glance. On opening the left auricle I found an exactly similar clot, and then it was discovered that a patent *foramen ovale* was present, astride of which was a massive embolism, about five inches (12·5 centimetres) in length and about half an inch (1·2 centimetres) in diameter, half being present in each auricle. Evidently previous clots had passed in the regular way, as an old ante-mortem clot, now nearly white, was found in a branch of the left pulmonary artery going to the lower lobe, and a more recent, redder clot adherent to the wall of a branch of the right pulmonary artery. A red ante-mortem clot nearly filled the left internal saphenous vein, but was only slightly adherent to its wall. At its junction with the femoral vein was the broad stump of a clot corresponding with that met with in the auricles.

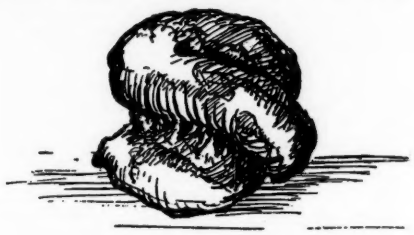

FIGURE 1.
Ante-mortem clot with folds glued together in the right ventricle.

One often hears of paradoxical embolism, but it must be rare to find a massive embolism still astride the *foramen ovale*.

Case III: Death from Massive Pulmonary Embolism Early in Pregnancy.

A woman, aged thirty-five years, was found dead at the door of her home. The case was reported to the coroner. A post-mortem examination (number 56) showed that she was three months pregnant and that ante-mortem clots were present in both pulmonary arteries as well as infarcts in each lung. Ante-mortem clots could be seen in the veins of the broad ligaments extending to the external iliac veins, and in the *vena cava* loose clots were found.

Case IV: Infarcts Clinically Suggesting Pneumonia; Sudden Death Later from Massive Pulmonary Embolism.

R.W., a male patient, aged fifty-four years, was admitted to the Royal Adelaide Hospital on October 29, 1946, and died suddenly on November 8. The symptoms he presented suggested the possibility that the case might be one of "virus" pneumonia. At the autopsy (number 286/46) a group of folded clots, of rather small calibre, but springing from a wide basal stem, was impacted in the right pulmonary artery. Old infarcts were found in the lower lobes of the lungs, one of which was evidently several weeks old. Ante-mortem clots were found in the popliteal vessels, extending into the veins in the gastrocnemii.

Infarcts in the lungs are so frequent (278—that is 4·6%—in 6,000 post-mortem examinations at the Royal Adelaide Hospital) that it is well to bear them in mind in cases in which lung conditions suggestive of pneumonia are present.

Case V: Paradoxical Embolism; Diagnosis of Hæmiplegia with Pneumonia; Sudden Death.

L.W., a woman, aged sixty-six years, was admitted to hospital with more or less transient left hemiplegia, low blood pressure (110 millimetres of mercury, systolic, and 80 millimetres, diastolic) and pneumonia. She died suddenly after the onset of clamminess, breathlessness, rapid pulse with harsh breathing and crepitations at the base of the left lung. Autopsy (number 88/47) first of all revealed small infarcts at the base of each lung, for which no cardiac cause could be found. This led to an inspection of the popliteal veins, where an ante-mortem clot was found in the left vessel. (It was ascertained later that the patient had had some sepsis of the foot after being attended to by a chiropodist.) This finding explained the infarcts in the lungs. A small infarct was found in the left kidney, which again could not be explained by any usual cardiac condition. A patent *foramen ovale* was now thought of as a possibility, and it was found that there was an opening in the septum between the two auricles which readily admitted the tip of a pair of forceps. No actual softening was found on careful section of the brain. However, there can be little doubt that the cerebral symptoms were due to the blockage of small vessels by emboli.

Although looked for when the heart was opened, no massive pulmonary embolism was detected in the pulmonary artery at its bifurcation; but the symptoms manifested just before death suggest either that such a condition had been overlooked or that the ante-mortem clot had subsequently broken up.

Reviews.

DISORDERS OF THE LOCOMOTOR SYSTEM, INCLUDING THE RHEUMATIC DISEASES.

THE seekers for a book dealing specifically with the rheumatic diseases might hardly consider more than a brief interest in "Medical Disorders of the Locomotor System, including the Rheumatic Diseases", by Ernest Fletcher, unless they read the preface and scrutinized the list of its contents.[1] The rheumatic diseases almost entirely occupy the stage, twenty-three chapters being exclusively devoted to their consideration, whilst in the other twelve they receive a good deal of attention. The inclusion of rheumatic diseases as part and parcel of the medical disorders of the locomotor system is a novel method of presentation, but undoubtedly both admirable and clinically sound.

The approach to the rheumatic diseases occurs in the first chapter, where the classification is dealt with in the orthodox manner, the difficulties arising therefrom are stressed, and the need for a better one is indicated. The advocacy of a detailed and thorough clinical examination bears the hall-mark of the painstaking and able clinician.

The physiology of the joints gives a glimpse of the importance of the synovial fluid, its chemical structure and cellular contents, whilst the author unveils some of the many gaps in our knowledge of this important subject. For a book of its size, the chapter on applied anatomy is extensive, but with the former one on physiology, constitutes a solid foundation for the correct consideration of the rheumatic diseases and their protean manifestations.

It is refreshing to note the emphasis on the predisposing conditions of the rheumatic diseases, with special reference to the capillary spasm so ably demonstrated by Fox and Van Breeman, well-known investigators in this field.

Focal sepsis is critically examined, and the author agrees that removal of focal infection is productive of complete recession of rheumatoid arthritis in a small number of cases.

The laboratory findings are dealt with in a concise manner, no mention, however, being made of the differential sedimentation test, its difficulty and time consumption apparently militating against widespread acceptance. The chapter on the relationship of rheumatic fever and rheumatoid arthritis is illuminating, but a diagnostic feature is the almost constant presence of the hæmolytic streptococcus in the former as compared with its infrequency in the latter. The subject of this relationship has received, and is still receiving, a good deal of attention in rheumatological literature.

The breadth of the ætiological concept of rheumatoid arthritis is well delineated, a critical pen touching on the streptococcus, the virus, allergy, endocrines, sulphur metabolism *et cetera*.

Unfolding the treatment of rheumatoid arthritis, the author pens these valuable words: "It is a great relief to realize that the day of specific treatment for specific illnesses, if not already past, is passing rapidly. The aim of treatment today is to include all angles and all facets of a patient

[1] "Medical Disorders of the Locomotor System, including the Rheumatic Diseases", by Ernest Fletcher, M.A., M.D. (Cantab.), M.R.C.P.; 1947. Edinburgh: E. and S. Livingstone, Limited. 9¼" × 6", pp. 638, with many illustrations. Price: 45s.

and a disease." The wise clinician today stresses the need of an adequate and diversified therapeutic armamentarium.

Chrysotherapy in the rheumatic diseases is now reaching equilibrium, and the bad effects of large dosage are passing with the knowledge that small doses, five to fifty milligrammes, are just as effective in treatment, and the author rightly stresses this fact. At the same time the relapse rate following cessation of chrysotherapy has been reduced by the institution of a maintenance dose over many months. A chapter on the variants of the rheumatoid syndrome is valuable, although "arthritis mutilans" is uncommon in rheumatic nomenclature.

The author's statement that chaulmoogra oil is of value in osteoarthritis opens up new ground and will be welcomed if correct.

The intraarticular injection of 0·2% of lactic acid is mentioned as being helpful in some cases of osteoarthritis, but pride of place in this disease and method, especially as regards the knee, is given to lipiodol. The X-ray plates revealing the solution still in the knee, years later, and the patient being symptomless, show that there is a remedy of an oily nature which is extremely slowly absorbed. X-ray therapy is mentioned as being of value in ankylosing spondylitis, but is not considered as a therapeutic agent in osteoarthritis of large joints or of the spine. In the opinion of certain Australian workers it has a place in the treatment of osteoarthritis.

The emphasis on the degeneration of the intervertebral disk and the loss of turgescence of the *nucleus pulposus*, as the precursors of polyspondylitis, is in accord with most modern thought.

A chapter on gout reveals the immaturity of our knowledge of an ancient disease, but the author rightly stresses the frequency of a normal blood uric acid content during the occurrence of an acute attack.

In his discussion on the causes of sciatica, the disk syndrome fits into its correct niche and fails to obscure the other relatively common factors, often so glibly cast to the scrap-heap of discarded theories.

Brachial neuralgia is well delineated on the clinical side; but there is no reference to the outstanding success of X-ray therapy in subacromial bursitis, not only in relieving pain and helping to restore movement, but in the actual resolution of the areas of calcification in a percentage of cases.

The differential diagnosis of backache and a chapter on the foot are both worthy of careful study. The author stresses the importance of physical methods in therapy and points out that the successful treatment of the locomotor disorders demands adequate knowledge of physical medicine.

Six valuable appendices ring down the curtain on a book that once read will be reread with interest and much profit. There is no book dealing with the rheumatic diseases, of comparable size, in which so much generalized knowledge has been concentrated so admirably, presented so effectively and can be read so easily. The volume, with its high-grade printing on excellent paper, photographs and X-ray plates of the highest order, and its numerous well-documented references, can be recommended both to the general practitioner and the specialist in rheumatology.

A BOOK ON OBSTETRICS.

AFTER calculating that the average medical practitioner will attend 1,800 deliveries during his lifetime, William F. Mengert discusses in "Postgraduate Obstetrics" common obstetrical procedures and the abnormalities which statistically may be expected among 2,000 pregnant patients. The concept was worthy, but its execution has proved disappointing, for what would have been helpful to the postgraduate has been spoilt by lack of adequate and exact instructions, the carelessly considered and often contradictory opinions expressed, and the possibly harmful advice given. Many examples can be quoted, but the following will suffice. Under the treatment of eclampsia, "the intravenous injection of 20 c.c. of a 10% solution of magnesium sulfate is often employed in the treatment of eclampsia", and for abortional bleeding, "progesterone may be given parentally in daily doses of 1 to 10 mg.". Few will agree that "it is better to perform several unnecessary sections *early* in labor than to be forced to do one emergency abdominal delivery at the end of a long labor", or that "bacteriological diagnosis of puerperal infection presents more of academic interest than of practical value". The section on *placenta prævia* is particularly unsatisfactory. The following two statements are the opening sentences of two successive paragraphs, and are separated by five lines only. "Since the mother can be safely treated either vaginally or abdominally, we believe that Cæsarean section should be performed only when clearly indicated for the sake of the child", and: "No serious objection can be raised against employment of Cæsarean section for all placenta prævia." Experienced obstetricians will be startled to learn that: "When bleeding arises during the separatory phase of the third stage of labor, it is advisable to administer an oxytocic drug. Despite many warnings about 'hourglass' contractions of the uterus, there is really no contraindication to the use of oxytocics."

The author is a prolific writer, and of the two hundred references given, 10% are to his own work. In this publication he introduces us to a new word, "antisepticize", which possibly may appeal to some, though its meaning is not quite clear.

The book is well printed, the illustrations are excellent and the cover is attractive. On the bookshelf of the post-graduate it will be an ornament, but that is all.

[1] "Postgraduate Obstetrics", by William F. Mengert, M.D.; 1947. New York, London: Paul B. Hoeber, Incorporated. 9¼" × 6", pp. 308, with many illustrations. Price: $5.00.

"THE COMPLEAT PEDIATRICIAN."

PROFESSOR WILBURT C. DAVISON, of Duke University School of Medicine, is to be congratulated on the excellence of "The Compleat Pediatrician", the fifth edition of which appeared recently.[1] It is a compendium of modern knowledge of pædiatrics intended for use as a *vade mecum*, and it should be extraordinarily useful as a daily companion to the practising and teaching physician fortunate enough to obtain a copy. Reviewers on each side of the Atlantic have given it high praise and have almost exhausted all the usual phrases expressive of unbounded approval. We can only hope that an ample supply will be made available to meet Australian demands. It is amazing to find such comprehensive information in so small a compass; the book "weighs just over a pound".

The author states in the preface that the compilation of the material has "amused him for twenty-five years", which reminds us of Izaak Walton's subtitle "The Contemplative Man's Recreation". The book had its origin in a notebook of "facts and methods" started in 1919 by the members of the Johns Hopkins pædiatric staff. By 1926 it was printed as "Pediatric Notes", and in 1934 it became for the first time "The Compleat Pediatrician". In the present edition some 10,000 lines have been changed to include additional information, particularly in chemotherapy and the application of the antibiotics to medicine, but there is also new material concerning infectious and tropical diseases. All the newer advances have been correlated with preexistent knowledge smoothly and harmoniously, presenting us with an up-to-date digest of outstandingly practical value at the bedside, in the surgery, in the laboratory and for teaching or studying about children in health or in illness.

The information is divided into 256 sections collected into thirteen chapters. The abridged names of the chapters and the sectional numbers appear on each page; normal numerical pagination has been eliminated to facilitate reference and cross reference and the book is well indexed. In the spirit of the great exemplar, Professor Davison indulges in many shrewd observations and reflections, but has spared us the dialogue and the verse. His felicitous style has brought the bare bones to life, and it is a real pleasure to go angling with him, though frequently the catch is embarrassing in its abundance.

The chapters deal not only with general and special systematic signs and symptoms, but also with medical orthopædics, nutritional requirements, growth development, special therapy, pædiatric nursing, prescribing and laboratory and clinical tests. When the book is used according to the author's design, there is very little chance of misdiagnosing or undertreating the patients, but, as Piscator might have said: "He that hopes to be a good pædiatrician must not only bring an enquiring, searching, observing wit, but he must bring a large measure of hope and patience, and a love and propensity to the art itself; but having once got and practised it, then doubt not but pædiatrics (like angling) will prove to be like virtue, a reward to itself." Professor Davison's book will provide the data and contribute largely to the pleasure. It deserves better paper and larger type.

[1] "The Compleat Pediatrician, Practical, Diagnostic, Therapeutic and Preventive Pediatrics: For the Use of Medical Students, Internes, General Practitioners and Pediatricians", by Wilburt C. Davison, M.A., D.Sc., M.D.; Fifth Edition; 1946. Durham, N.C.: Duke University Press. 9" × 6", pp. 280. Price: $3.75.

The Medical Journal of Australia

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All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

THE GENERAL MEDICAL COUNCIL OF GREAT BRITAIN AND THE MEDICAL CURRICULUM.

WHEN we speak of the medical curriculum we mean the ground which the student has to cover, the course of study which he has to complete, before he is allowed to present himself for his qualifying examination. The advances that are made in the medical sciences call for repeated revision of the curriculum, and for this reason it has been said that a perfect curriculum will never be found. The professional lifetime of most practitioners of medicine has seen important changes in the curriculum—generally in the way of additions—and the burden of the student has become increasingly great. One of the most important documents of recent years dealing with medical education was the "Report of the Inter-Departmental Committee", the "Goodenough Report". Sir William Goodenough was the chairman of the committee, and the report which was presented to the Minister of Health of Great Britain and the Secretary of State for Scotland was printed in 1944. A summary of the report appeared in the *British Medical Journal* of July 22, 1944, and reference was made to it in these pages on January 20, 1945. The General Medical Council of Great Britain has now taken the Goodenough Report, criticized it and made recommendations of its own. The recommendations are published in a brochure which is dated April, 1947.

Before these recommendations are mentioned it will be useful to draw attention, as the Council itself does, to the statutory position of the General Medical Council in regard to the medical curriculum. The council is known to be the body which polices the *Medical Acts* in Great Britain—its decisions in the removal of names from the Medical Register are promulgated. Its activities in medical education are easily forgotten. It has the power to obtain from bodies which grant diplomas conferring the right of medical registration under the *Medical Acts* information on the courses of study and examinations to be gone through before registrable qualifications are obtained and on the general requisites for the obtaining of such qualifications. If it does not think that the courses of study and the examinations are of a sufficiently high order it may make a representation to this effect to the Privy Council. The Privy Council may then take certain steps so that an impugned qualification shall not confer the right of registration. Again, the duty is laid upon the Council by another section to secure the maintenance of a sufficiently high standard of proficiency from candidates at qualifying examinations. For this purpose the Council may appoint inspectors who are required to report to the Council, and these reports are forwarded to the Privy Council. The Council may make representations to the Privy Council on the basis of these reports, and the Privy Council has power to act as before mentioned. It is explained that the object of the General Medical Council in publishing recommendations about the medical curriculum has always been to give practical assistance to licensing bodies and medical schools by translating into concrete terms abstract references in the *Medical Acts* to a standard of medical education. It should be emphasized that nothing in the *Medical Acts* entitles the General Medical Council, even if it wished to do so, to prescribe a uniform curriculum to be imposed on all students. There is in fact in Great Britain "no such thing as 'the medical curriculum' in the sense of a single curriculum consisting of identical courses of study and standardized examinations". The Goodenough Committee described the overhaul of the curriculum as an urgent necessity. It was in fact the severe criticisms of the Goodenough Committee which made the General Medical Council accelerate its normal process of revision; and its first business was to see how far the committee's criticisms were valid and whether anything could be done to meet criticisms found to be valid.

The Goodenough Committee regarded a drastic overhaul of the medical curriculum as an urgent necessity because it held that a reorganization of medical schools and their teaching hospitals would be largely barren until the present overcrowding of the curriculum was remedied—the load of work on the undergraduate should be lightened by the elimination of all that was redundant or belonged to the province of the specialist. The Goodenough Committee thought that the total normal length of the course of training leading to the final examination should not exceed four and a half years, comprising a preclinical period of two academic years and a clinical period of thirty months which should be fully used, except for reasonable holidays of a total duration of eight weeks. The committee also contemplated that every student should be required by law, after passing a final examination but before being registered, to hold for a period of twelve months junior house appointments in approved hospitals. The committee was satisfied that if the curriculum was revised on the principles laid down by it, the reduction in time would be both possible and advantageous. The General Medical Council points out that owing to its statutory limitations it can neither confirm nor confute the committee's general conclusion that part of the load of work on undergraduates consists of matter that is redundant or that belongs to the province of the specialist. The Council has, however, revised its recommendations and has included in them only those subjects of instruction to students which in its

deliberate judgement are essential to the safety of the public, and has omitted all matter that does not seem to be essential in this sense. Having done this, the Council cannot accept the four and a half year period. It thinks that the curriculum should extend over a period of at least five years, made up of a period of preclinical studies of not less than five academic terms, an introductory clinical course lasting three months and a subsequent period of clinical studies covering not less than thirty-three months. The Council has regarded it as its duty, in issuing recommendations to licensing bodies and medical schools, to ensure, so far as the matter rests with them, that if in their judgement instruction in any subject is necessary in order to make a student a safe practitioner on the public, adequate time for that instruction shall be provided before the student is admitted to a final or qualifying examination. It has assumed that the student must learn the essentials of the subject, if at all, before he passes such an examination. The Council obviously approves of the idea that the student should spend twelve months in a hospital after qualification before he is admitted to registration, because the statement is made that it recommended this course in its evidence before the Goodenough Committee.

The recommendations of the General Medical Council which are set out in the brochure are reproduced *in extenso* in another place in this issue. All that is proposed in the present instance is to draw attention to some aspects in which these differ from the ideas advanced in the Goodenough Report. In regard to general and pre-medical education the Council is in general agreement with the views of the Goodenough Committee that an elementary grounding in the physical and biological sciences should be obtained as part of a general school education over a period of years. It also agrees that general education on broad cultural lines should be continued until the time when concentration on professional studies takes place. The Council, however, takes a somewhat narrower view of the responsibilities of licensing bodies and medical schools. It therefore does not include in its recommendations anything which might obstruct progress towards a state of things in which all candidates for admission to schools have had a broad general education including the principles of physical and biological science. At the same time it includes whatever may be of assistance to bodies and schools in discriminating between candidates for admission to schools whose education in general subjects on the one hand and in scientific subjects on the other is not well balanced. In regard to professional education generally the Council agrees that "in deciding the importance that should be attached to the various subjects and the type of instruction that should be given, the bias should be towards the needs of the future general practitioner". In regard to the period of pre-clinical studies the main difference of opinion has to do with the duration of these studies—the Council wants five terms and the committee two years. The Council is not prepared to include in pre-clinical studies any reference to elements of the statistical method and any instruction on social medicine. The Council wishes to leave to licensing bodies and medical schools the fullest liberty to determine at which stage and in what form instruction on social medicine should be given. It has therefore not included social medicine in the pre-clinical period. As a matter of fact it will be found in the clinical period and in regard to statistics the idea is that at the earliest possible stage the student's attention should be drawn to the valuable contribution he can make to statistics in his future professional life by accuracy in certification. In the period of clinical studies it is pointed out that emphasis is laid on pædiatrics, psychiatry and social medicine. Unfortunately it is not possible to give in this place an adequate idea of the Council's views. The Goodenough Report must be consulted as well as this brochure for this purpose. Of the greatest importance is the fact that pædiatrics is recognized as "a major subject" in the curriculum. This being so, it is easy to understand the recommendation that the clinical clerkship in this subject should be increased from one month to three. Also of significance is the opinion that instruction in pædiatrics should include instruction in such historical aspects of the subject as the origin and development of concern with infant mortality as a problem of public interest, and of measures directed to its reduction. This, of course, will overlap social medicine to a certain extent. In psychiatry the General Medical Council agrees with the importance attached to the subject by the Goodenough Committee and also with the idea that instruction in the subject should be concentrated rather on potential than on established disorders of the mind. The Council also consents to the need for cooperation between teachers of psychiatry as such and teachers of other subjects, so that throughout the period of clinical studies the attention of the student is continuously directed to the importance of the interrelation of physical and psychological aspects of disease. In regard to social medicine the Council agrees that there is much room for experiment in the arrangements that should be made to secure the proper training of students in social medicine. There will also, it is stated, be differences of opinion whether it is advisable to appoint a teacher of social medicine as such, for the purpose not only of giving courses of instruction in the subject, but also of ensuring, through the practical cooperation of teachers of other subjects, the permeation of the whole of the education given in the school by the ideas of social medicine.

For the other headings in the brochure the recommendations published on page 87 must suffice. The present reference to this subject will show that the need for the revision of medical curricula is as great now as it has ever been. This need arises partly from the access of fresh knowledge and partly from altered points of view. On the one hand fresh knowledge may be too specialized for inclusion in the ordinary curriculum or so important as a basis for future understanding that it has to be included. On the other hand the changed points of view and reemphasis which characterize modern conceptions of social medicine and psychiatry make changes imperative. The subject is as fascinating as its clarification is urgent, and with it all is the complication of the enormous numbers of students who have entered and are seeking to enter medical schools. The object is to turn out skilled and reliable doctors, men of character who are worthy of their calling. Paper planning of curricula alone will not do this, but is an essential part of the process; the best brains in the profession are needed for the task.

Current Comment.

RHEUMATIC FEVER.

WHETHER considered from the clinical or academic viewpoint, rheumatic fever is still very largely an unsolved problem. However, it is a most important practical problem and a good deal of interest has been recently focused on it. Knowledge of the disease has advanced as a result and the solution of the problem seems to be much nearer. A series of papers is now being published from which may be gleaned most of the significant views on the subject in America. These papers were read by eminent practitioners in this field at a special series of "seminars on rheumatic fever" conducted at the Saint Francis Sanatorium for Cardiac Children, Roslyn, Long Island, New York; in most cases the subsequent discussion has also been recorded. The views expressed and the findings reported by the individual speakers are at times in conflict, but the presentation is, as a whole, constructive and conservative. It is proposed to present a summary of the papers and of the relevant discussion as they come to hand.

The epidemiology of rheumatic fever is discussed by John R. Paul from the Department of Preventive Medicine, Yale University School of Medicine.[1] In a few preliminary remarks on pathogenesis he draws attention to the long-observed association of sore throat with rheumatic fever. Two false therapeutic trails indicated by this association, namely, tonsillectomy and the removal of septic foci, have been almost universally given up, according to his statement; but work developed over the past fifteen years indicates that, from the epidemiological standpoint, rheumatic fever is in some way related to infection caused by hæmolytic streptococci. In about half the total number of cases of rheumatic fever the following sequence has been observed: an acute streptococcal infection occurs (phase I) which is not necessarily severe and may escape notice; then follows a quiescent or latent period of five to twenty-one days (phase II); finally rheumatic fever develops (phase III). Paul quotes a classical example of this sequence in a milk-borne epidemic of rheumatic fever in Denmark in 1926; the same type of sequence, he states, has been repeatedly observed since and was common in military installations during the war. Study of streptococcal infections in individual families reveals not only this sequence, but also a remarkable variation between individuals in the clinical manifestations of an attack by the *Streptococcus hæmolyticus* and a familial factor in the degree of susceptibility to subsequent rheumatic fever. Paul asserts that type A hæmolytic streptococcus may be food-borne or milk-borne, and that no special vector exists for its transfer; crowded dwellings or the herding together of susceptible children or adults leads to the spread of infection. The incidence and distribution of rheumatic fever are difficult to determine as it is not a notifiable disease. However, examination of hospital admission records shows that rheumatic fever stands high in the list of disabling diseases. The age distribution is of interest; Wyckoff's investigation of 1,000 cases of heart disease in New York showed that, in the childhood age group (ten to nineteen years of age), eight out of every ten hearts affected by cardiac disease had a rheumatic lesion, and that as age increased the relative prevalence of rheumatic heart disease decreased. First attacks usually occur at about the age of six. High susceptibility is maintained up to puberty and then it rapidly declines. Once a child has had a rheumatic attack, the chances for recurrence are much greater than is the case in one who has not as yet had a first attack. Climatic conditions appear to affect the distribution of the disease which is considered to be less prevalent in warm dry climates. The mortality rate of rheumatic fever relative to the general death rate is lower in the southern part of the United States (especially the "Gulf States") than in the north. Racial factors have not been well investigated, but some studies in New York indicate an increased susceptibility among the Irish; Negroes acquire the disease less often than whites, but tend to develop a more severe form. Familial occurrence is noted, but its significance is disputed. Paul favours the idea that a tendency to acquire the disease may be inherited. Common environmental factors cannot be ignored, of course, though these are in themselves difficult to assess. Slum conditions, poverty, and dampness of houses are alleged as ætiological factors. The main factor here may be crowding with its resultant increased opportunity for spread of streptococcal infection; poor people usually have to live in crowded conditions and are more likely to live in damp houses than are more fortunate families. Paul's final remark in summing up is that "the circumstances under which rheumatic fever occurs are similar to the circumstances in which streptococcal infection occurs. The similarity is due to a common cause". In reply to questions, Paul stated that he considered it safe to say that there had never been an epidemic of rheumatic fever without a preceding episode of streptococcal infection; although type A streptococci were common, rheumatic patients reacted to them in a peculiar way; the commonest streptococcal infection was probably acute tonsillitis, but there were many other forms, including scarlet fever. *Streptococcus hæmolyticus* was not uncommon in the throats of children in New York, but Paul emphasized the view that investigation of nasal flora was of greater epidemiological importance than investigation of throat flora; the nasal carrier of type A streptococci was apparently more dangerous than the throat carrier.

[1] *American Journal of Medicine*, January, 1947.

The discussion of the relationship of streptococcal infections to rheumatic fever was carried on by Homer F. Swift from the Hospital of the Rockefeller Institute for Medical Research. Swift's paper[1] provides a full study of current knowledge of the streptococci, including details of the technique of grouping and typing these organisms, as well as a consideration of the association of the hæmolytic streptococcus with rheumatic fever. Only the details relevant to the main subject will be referred to here. After mentioning the usual methods of classifying the streptococci and, in particular, that derived from their action on red blood cells and that based on immunological procedures, Swift describes the subdivision of the hæmolytic streptococci according to the presence of group-specific serologically active carbohydrate substances into groups designated by the letters A to M (omitting I and J). The characteristic source and pathogenicity of each of these groups are given. Streptococci of group A are characteristically pathogenic in man; but others, normally saprophytic, may occasionally be pathogenic in man. On the other hand, group A streptococci are normally saprophytic in cattle, but may occasionally cause mastitis in a cow, leading to an epidemic of sore throat among those who drink the cow's milk. Such epidemics are often followed by epidemics of rheumatic fever. In contrast, human infections with streptococci belonging to groups other than A have not been shown to induce rheumatic fever. Group A streptococci are further divisible into immunological types on the basis of their content of two different type-specific components, the so-called M and T substances. The M antigenic content of a given strain is liable to be quite variable, the virulence of a variant being apparently directly related to the M content. A fact of epidemiological importance is that humans or animals infected with group A streptococci of a given type are resistant for fairly long periods to reinfection with that type, but are readily infected with strains of heterologous types. A type-specific antibody, the so-called bacteriostatic antibody, has been demonstrated *in vitro* in human serum; its presence is shown by the phagocytosis of virulent M-producing strains of streptococci. Application of bacteriostatic tests has demonstrated the development of type-specific antibodies in the blood of patients following group A streptococcal infections, "and as might be expected, in that of patients with rheumatic fever".

Group A hæmolytic streptococci, Swift states, also form a number of extracellular products, of which four have

[1] *American Journal of Medicine*, February, 1947.

been fairly well studied: streptolysins, fibrinolysin, erythrogenic toxin, and hyaluronic acid. The streptolysins and fibrinolysin are associated respectively with the hæmolysis of red blood cells and the dissolving of fibrin. Persons infected with appropriate streptococci develop antistreptolysins and antifibrinolysin in their serum; the presence of relatively large amounts of these antibodies in the serum of patients with rheumatic fever appears to be significant. Erythrogenic toxin appears responsible for the rash of scarlet fever; it is thought that the production of scarlet fever in one person and simple nasopharyngitis in another person in response to streptococcal infection is due to the absence or presence respectively of antierythrogenic antibodies in the serum of the individual. Scarlet fever appears to bear the same relationship to rheumatic fever as other streptococcal infections. The significance of hyaluronic acid is not clear.

Swift then goes on to present case histories of four patients in whom, following scarlet fever due to an identified streptococcus, evidence occurred of what was probably rheumatic fever, though it could not be clinically diagnosed in all cases. He also quotes observations in 110 young adults with scarlet fever, among whom a small group developed definite rheumatic fever and others developed signs and symptoms which did not allow a clear diagnosis of rheumatic fever. He mentions the detection among "draftees" of a great many instances of chronic rheumatic heart disease without any ascertainable history of rheumatic fever, and expresses the view that many patients suffer from rheumatic fever without polyarthritis following streptococcal infections, but it is not recognized as such. It is suggested that "in allowing most patients to escape from observation during the two months following their acute streptococcal infection, we are failing to detect many cases of low-grade rheumatic fever. It should be more widely recognized that many patients have rheumatic fever with little or no polyarthritis". Additional evidence of the relationship between rheumatic fever and group A streptococcal infection rests in the controlled use of sulphonamide prophylaxis wherein, by preventing streptococcal infections, both recurrences and new cases of rheumatic fever are almost certainly averted. Neither sulphonamides nor penicillin have any demonstrable value in the treatment of rheumatic fever, once it is established, which lends weight to the opinion that their beneficial prophylactic effect is entirely related to the prevention of the preliminary streptococcal infection. Swift also emphasizes that other respiratory infections have never been implicated as precursors of rheumatic fever. He obviously feels very strongly about the importance of recognizing the part played by group A streptococcal infections in rheumatic fever in relation to the prevention of this crippling disease. He advocates more attention to the problem of preventing streptococcal infections, and an altered attitude towards the apparently benign nature of scarlet fever, tonsillitis and streptococcal pharyngitis. In reply to questions Swift made a number of further observations. He considered that, following scarlet fever, a patient could be allowed up when the temperature and pulse were normal, when there was no leucocytosis and when the erythrocyte sedimentation rate was normal; this was also desirable after streptococcal naso-pharyngitis. The erythrocyte sedimentation rate should be observed at intervals for two months, or longer if abnormal. He held that most rheumatic fever recurrences could be prevented by the administration of continual small doses of sulphonamides, and that occurrences could probably be prevented by prolonged prophylactic administration of sulphonamides to members of a family of which one member had rheumatic fever. The efficacy of sulphonamides in established streptococcal infections was doubtful at best. Swift agreed, however, that the streptococcus was only one of a number of factors concerned in the ætiology of rheumatic fever; the soil in which the streptococcus acted was of considerable importance.

This question of the relative importance of soil and seed was taken up by May G. Wilson, of the New York Hospital and Cornell Medical School, who discussed the significance of heredity in rheumatic disease. Her paper, while not flatly contradicting the views of Paul and Swift, provides a corrective to the development of an unbalanced view of the importance of the streptococcal infection.[1] The claim is made that hereditary factors are primarily responsible for the familial concentration of rheumatic fever and that in these families the distribution of cases has been found to follow the general laws of recessive Mendelian inheritance. The genetic susceptible child cannot be identified, but the chance of being susceptible is as follows. If both parents are rheumatic, nearly every child will be susceptible. If one parent is rheumatic and the other is not rheumatic but a carrier (that is, rheumatic fever is present among near relatives), each child has a 50% chance to be susceptible. If neither parent is rheumatic, but both parents are carriers, each child has a 25% chance to be susceptible. If at least one child is rheumatic, it may be assumed that the parents are carriers. If one or both parents are non-rheumatic and non-carriers, susceptibility among children is unlikely. Genetic analysis of a series of rheumatic families yielded a close agreement between observed and expected results. Thus there are apparently susceptibles and non-susceptibles in the population depending on a genetic predisposition, but other factors are probably concerned in whether the disease develops or not. The disease is seldom manifested before the age of four years, the onset in the majority of cases being between that age and puberty. Observations on 109 families showed that "the intrafamilial pattern of spread of rheumatic fever was completely described by the use of age and genetic factors". It is emphasized that statements about heredity refer to "explicit cellular and functional attributes and properties whose precursors have a concrete and real existence in the genes". Expression of the condition may depend upon a variety of exogenous factors. Non-genetic factors must be evaluated in considering acquisition of the disease in a susceptible host. Results of recent attempts at prophylaxis are regarded by Wilson with caution. She considers the approach valid, but states that published studies do not meet the basic requirements for adequate biostatistical analysis; "final judgement as to the validity of the etiologic concept and consequent preventive therapy which are based on these studies must be deferred". Investigation of the question of risk of recurrence revealed that the average over-all risk for a major recurrence was 25% for patients between the ages of four and thirteen years, 9% for patients between the ages of fourteen and sixteen years, and about 4% for those seventeen to twenty-five years of age. The risk of recurrence during the year immediately following a major episode was twice as great as that following at least one year of freedom and three times as great as that following at least two years of freedom from symptoms. In the subsequent discussion Wilson was inclined to discount the importance, or at any rate the validity, of suggestions that the disease incidence was related to seasonal factors and particular locations in a town. She apparently regarded the hereditary factor as much the most significant one; the factors responsible for the manifestation of the disease were not determined. In view of the possible ill-effects of sulphonamide administration there were not yet adequate grounds for its use prophylactically other than on an experimental basis. The question of whether parents with a rheumatic family background should have children should be left to their discretion after the position had been explained.

It will be seen that in general these three papers can be taken together despite differences of opinion. The hereditary factor appears to be well demonstrated and to be the basis of susceptibility. It does not seem reasonable, however, to gainsay Swift's careful study of the importance of the streptococcal infection in relation to the actual onset of the disease. Few practitioners today will accept with enthusiasm any prophylactic system which involves the administration of sulphonamides for an indefinite period, but drug prophylaxis warrants careful investigation. The first reference to this type of prophylaxis in this journal will be found in the issue of May 8, 1943, when the subject was discussed in the light of papers published in America in 1941 and 1942. Environmental

[1] *American Journal of Medicine*, February, 1947.

factors also require attention; it does not seem wise to discard them from calculations unless their relevance is clearly disproven. Finally, it seems particularly important to heed Swift's plea for the adoption of a more careful attitude towards streptococcal infections of the nasopharynx and for greater alertness towards the detection of low-grade rheumatic infections. In this respect more information should be available in the later papers of the series which deal with clinical aspects of the disease.

DEFECTIVE COLOUR VISION IN INDUSTRY.

THE Colour Group of the Physical Society of London has done well in entrusting to a committee of experts the investigation of so-called "colour blindness".[1] This committee had a physiologist as chairman and contained at least one medical practitioner, the medical officer to the L.M.S. Railway; also representatives of the British Optical Association, Kodak, Limited, Thorn Electrical Industries, the London County Council School of Photo-engraving, besides two men of science and a technologist. The terms of reference were:

> To obtain as complete information as possible as to the techniques and processes in which deficiencies of colour vision are a handicap, to report on existing methods of testing such deficiencies in industry and in schools, and to make recommendations regarding the improvement and coordination of these tests.

The first chapter is devoted to the nature and incidence of defective colour vision, and, like all such inquiries, suffers from the disability that the cause of the abnormality remains undiscovered. Wisely the report omits all reference to the many theories of colour vision put forward from time to time by physiologists and psychologists, all in enthusiastic disagreement with each other. The outstanding characteristic of all who display defective colour vision is that the total number of colours which they can recognize as separate and distinct is smaller than the number which the normal person under identical conditions of illumination can distinguish. The report might have mentioned that many Germans who have written on this topic have abandoned the term "colour blindness" and used "colour confusion" instead. A reduced ability to differentiate colours naturally produces mistakes in colour naming and colour matching, and it is precisely these which are of practical importance. A normal person can make a fairly accurate match of colour by mixing three coloured lights, say, red, green and blue; but a certain percentage of people can do all their colour matching by mixing two coloured lights only; a two-colour system of photography could give such persons a satisfactory scale of colours as they see them. It is scarcely necessary to mention those few who differentiate by brightness alone and can match all colours with any one or with white light; these are the monochromats in whom other pathological conditions are present and who are not likely to be employed in any industry where colour plays a part. The defects important in industry are found in the dichromats, about 2% of the male population, and the anomalous trichromats, about 6% of the male population, who distinguish three fundamental colours, but whose matches differ from the normal. Dichromats and anomalous trichromats can be further subdivided each into three groups, a detail which need not here be discussed. As is well known, colour confusion is very rare in the female, but is, like hæmophilia, transmitted by the female alone to her male progeny. Detection of abnormal colour vision may be difficult in early childhood, but at the age of thirteen definite diagnoses can be made.

Chapter II is an elaborate description of the tests which have been devised to detect and classify defective colour vision. The large number of these suggests that not one of them is even near perfection. Briefly they may be grouped under the following heads: confusion card tests, lantern tests, wool tests, matching tests such as the Nagel anomaloscope, possibly the most scientific of all but often showing disconcerting inconsistencies, and lastly, miscellaneous tests of which some thirty are mentioned. Out of the welter of possibilities the committee singles out the Ishihara card test for general use on account of its cheapness and the fact that the investigator needs no special training. The Rabkin (Russian) card test was also found to be satisfactory and in some respects superior to the Ishihara. The committee sums up that no one test, other than those requiring very expensive colorimetric apparatus, can diagnose defective colour perception with any approach to scientific accuracy. The navy, mercantile marine, flying and railway services have their special lantern tests to suit the specific conditions which the men employed are likely to meet, and it is not proposed to suggest any alteration. Professor L. C. Martin in a criticism of this report makes a strong plea for uniformity of tests in industry, for in the absence of such uniformity some capriciousness of selection is bound to occur and resentment by the rejected is also inevitable.[1] It is certainly a curious fact that the eminently practical mercantile marine should have chosen red and green lights for port and starboard of ships, the two colours which are most frequently confused. It has been cynically suggested that cheapness of red and green glass was the cause.

Chapter III deals with colour vision in industry and the services. In general the services may be regarded as having devised adequate tests for their personnel, but little has been done in the case of many industries. The report gives a detailed survey of various industries and vocations in which "colour blindness" might be expected to be productive of trouble. The reader not particularly versed in the literature of the subject might well be surprised at some of the disabilities revealed. In analytical chemistry today many quantitative estimations are incapable of being gravimetrically conducted on account of the small masses of the material to be estimated; in such cases colorimetric procedures are resorted to, and it is precisely in these that a chemist may flounder in his matching and therefore in his conclusions. Again "colour blind" geologists and geographers may be unable to differentiate the tints used to denote varying geological horizons or political frontiers. But in general this report indicates that much less incompetence was discoverable in industry than was suspected, for the departments of most industries requiring normal colour vision are few, and if a man proves incapable in the task assigned, he is given another job where he can be perfectly competent.

Perhaps the most valuable part of the report is the recommendation that all school children should be examined for colour vision, and the committee recommends the Ishihara test on account of its cheapness and the fact that it can be applied by any school teacher who has normal colour perception. When a defect is discovered the boy can be told in early life what occupations he cannot possibly enter and so may be spared considerable pain arising from disappointed ambition. Naturally success in a school test cannot exempt from the special examinations already prescribed for the services, civil aviation, engine driving and so forth. The report does not deal with medical aspects of the question, and it may perhaps be thought by some that the inquiry lies outside the province of the practitioner. There are, however, two activities in which medical judgement can be useful. A resentful parent might challenge the verdict of a school teacher as to the "colour blindness" of his boy, but would accept without protest the word of the family doctor. In the second place there should be, especially with monochromats and in all cases in which inconsistent findings have been obtained, an examination of the eyes by a skilled ophthalmologist.

There can be no doubt that this report is a valuable piece of work, and the Physical Society is to be commended for carrying it out and having it published at so cheap a price.

[1] Report on Colour Vision in Industry by a Committee of the Colour Group, published by the Physical Society, 1, Lowther Gardens, Prince Consort Road, London, S.W.7; 1946. Price: 3s. 6d. net, inclusive of postage.

[1] L. C. Martin: "Defective Colour Vision in Industry", *Nature*, April 5, 1947, page 460.

Abstracts from Medical Literature.

PHYSIOLOGY.

Sweat Gland Activity.

W. C. RANDALL (*The American Journal of Physiology*, October, 1946) has applied the starch-iodine technique to study the activity of sweat glands on the extensor surface of the forearm. He states that between environmental temperatures of 20° to 35° C. sweat glands on the extensor surface of the forearm are phasically active, showing alternating periods in which large and small numbers of glands are successively active in secreting onto the skin surface. The periodicity and the number of glands participating in each cycle of activity are not regular, but are influenced by environmental temperature, by strong peripheral and visceral stimulation, and by psychic and emotional excitation. With the undisturbed subject resting in a comfortable environmental temperature, sweating is characterized by the sudden excitation of a number of sweat glands for a period of a few seconds followed by a period of little or no sweating activity by these glands. The secretory activity of individual glands under these conditions is thus relatively short, but activity may alternate between many glands in a given area and thus prolong the duration of a given sweating cycle. Extraneous excitation may also prolong a period of secretion, and cyclic activity may be superimposed upon the functional activity of large numbers of glands at high environmental temperatures. When presented with a strong thermal stimulation, the sweat mechanism responds in two important stages, First, an increase occurs in the number of functional sweat glands, following a few minutes after presentation of the stimulus. If this stimulus is sufficiently severe and prolonged, a second stage of sweating is marked by a large increase in output of the individual glands. Simultaneous peaks and depressions in the number of functional sweat glands on both forearms suggest the presence of a sweat centre in the central nervous system discharging periodically and bilaterally to the sweat glands. When radiant heat is applied to one arm, sweating is likely to be localized in the area heated, but if the heating is sufficiently intense, bilateral sweating is observed, with greater numbers of active glands on the heated arm.

Changes in Blood Acid-Base Balance during Asphyxia and Resuscitation.

F. S. GRODKINS, A. LEIN AND H. F. ADLER (*The American Journal of Physiology*, November, 1946) report that the acid-base changes in the arterial blood of dogs during fatal asphyxia and during successful resuscitation have been studied. Asphyxia was produced by tracheal obstruction or by nitrogen inhalation. During fatal obstructive asphyxia there is an early respiratory acidosis followed by an uncompensated metabolic acidosis. By the time circulation fails, arterial pCO_2 reaches an average value of 64·9 millimetres of mercury, and the pH falls to 7·20. In fatal nitrogen asphyxia the early respiratory alkalosis is overcome by a late respiratory and metabolic acidosis so that both arterial pCO_2 and $[H^+]$ are slightly above normal when circulation fails. During artificial respiration with air at the animal's control rate and tidal volume, arterial pCO_2 and $[H^+]$ continue to rise in most cases. In all cases both the pCO_2 and $[H^+]$ remain above normal until spontaneous respiration is resumed. On restoration of spontaneous breathing, hyperventilation occurs in an attempt to lower the pCO_2 and compensate the metabolic acidosis. These results indicate that there is no deficiency in the arterial levels of pCO_2 or $[H^+]$ during the entire course of obstructive asphyxia or in the later stages of nitrogen asphyxia. They further indicate that artificial respiration with air at a normal minute volume does not produce a deficiency in the levels of these agents in the arterial blood. Thus it would appear to be unnecessary to include carbon dioxide in the resuscitative mixture in order to maintain normal arterial levels of pCO_2 during artificial respiration.

The Effects of Water Diuresis and Exercise on the Urine.

J. A. BARCLAY, W. T. COOKE, R. A. KENNEY AND M. E. NUTT (*The American Journal of Physiology*, February, 1947) describe the results of some experiments on students. Results are presented of experiments carried out over three years on the changes occurring during diuresis and the effects of exercise, time of day and meals, on these changes. As a result of exercise, water diuresis may or may not be inhibited. The pH of the urine during diuresis tends towards 6·9 irrespective of initial level; during exercise there is always a marked fall. It has been found that there is always a decrease in the plasma flow and in the filtration rate and an increase in the filtration fraction during exercise. As a consequence of taking water, there is either a rise or fall in the amount of chloride excreted. It is shown that this is a reflection of the varying degrees of tubular activity towards chloride, and as a result of exercise, tubular activity increases still further and there is a marked fall of chloride excretion. The authors consider that their findings offer support for the postulate that there is a proximal and distal component to reabsorption.

Antiperistaltic, Peristaltic and Inhibitory Phenomena in the Colon.

J. AUER AND H. KREUGER (*The American Journal of Physiology*, February, 1947) report a simple, efficient and new procedure for the study of intestinal movement in the rabbit. They state that partial isolation of a segment of the descending colon in a barbitalized rabbit readily permits the study of peristalsis and antiperistalsis by mere inspection. Peristalsis is produced by inserting a dry, normal scybalum into the oral end of the empty colonic segment. Antiperistalsis is produced by temporarily blocking a peristaltic wave of contraction in the segment until an antiperistaltic contraction wave appears. The antiperistaltic and peristaltic waves of contraction are preceded by a demonstrable wave of inhibition and the inhibited area is relatively refractory to moderate stimuli. The antiperistaltic and peristaltic waves of contraction and inhibition pass the partial cuts in the colon without any obvious pause. If the cuts sever the entire circumference, the contraction waves do not pass through except in a few doubtful instances. Inhibitory waves were not seen crossing a complete cut. Removal of influences from the central nervous system practically abolishes antiperistalsis; typical peristalsis, however, persists. The speed of an antiperistaltic wave of contraction is considerably slower than that of a peristaltic wave of contraction. New evidence is presented that contraction of the longitudinal muscle layer is accompanied by an inhibition of the underlying circular fibres, and conversely, a contraction of the circular layer is accompanied by a relaxation of the longitudinal muscle layer. The formation of transverse ridges in the colonic wall covering the face of a scybalum adjacent to the wave of contraction is explained by this reciprocal relation of the two muscle layers. It can easily be shown in tangential sections of the dilated descending colon that muscle fibres of the circular layer pass directly into the longitudinal layer and *vice versa*. Inspection of the two lips of a cut may betray whether an unseen contraction wave was peristaltic or antiperistaltic; the first lip passed by the scybalum is more strongly everted than the second lip.

The Circular Components of the Muscularis Mucosæ of the Small Intestine of the Dog.

C. E. KING, L. C. GLASS AND S. E. TOWNSEND (*The American Journal of Physiology*, March, 1947) report that they have been successful in recording vigorous contractions of the circular submucosal muscles of the small intestine of the dog. They describe the method by which contractions of the circular components of the *muscularis mucosæ* of the dog's small intestine can be recorded, both in excised surviving strips, and in the living animals with the circulation intact. The circular submucosal muscles possess both an adrenergic and a cholinergic motor innervation. No evidence has been obtained for the presence of an inhibitory innervation. The contractions, both spontaneous and induced, are less pronounced and constant in the upper levels of the small intestine than in the ileum. Contractions induced by local stimulation are graded in accordance with the intensity of the stimuli. Evidence is present indicating that the often observed contractile effect of splanchnic stimulation on the small intestine of the dog is due to activity of the *muscularis mucosæ* and not of the outer musculature.

Influence of the Thyreoid Hormone on the Effector Systems of the Mammalian Heart.

F. HOFFMAN, E. J. HOFFMAN AND J. TALESMIK (*The American Journal of Physiology*, March, 1947) report two series of experiments performed on normal and thyreoidectomized animals and on animals treated with thyreoid hormone. They state that, in the case of rabbits, cats and rats in the hyperthyreoid state, the effect of vagus stimulation on the heart is less marked than in the case of normal animals. Often there is no vagus effect at all and sometimes the stimulation of the vagus leads to acceleration of the heart rate. The impaired vagus effect is returned to normal by eserine or prostigmine. In the case of thyreoidectomized cats the effect of vagus

stimulation on the heart is more marked and maintained than in the case of normal animals. On isolated hearts of cats and guinea-pigs in the hyperthyreoid state, acetylcholine has only a slight depressor action. This effect is always followed and overshadowed by a pronounced stimulation, similar to that produced by epinephrine. In perfusates flowing from hearts of animals in the hyperthyreoid state there appear, as a consequence of injections of relatively small doses of acetylcholine, unusually high amounts of an epinephrine-like substance. On isolated hearts of thyreoidectomized cats and guinea-pigs, acetyl choline exerts an intense depressor effect. The stimulating action of this drug is very weak and often completely absent. In perfusates of isolated hearts of guinea-pigs in the hyperthyreoid state there appears an epinephrine-like substance only when large doses of acetylcholine are injected. A high sensitivity to adrenaline of the hearts of animals in the hyperthyreoid state and a low sensitivity to this agent of the myocardium of animals in the hypothyreoid state are always observed. The changes of the sensitivity of the heart effector systems to the neurotransmitter substances contribute to the elucidation of the cardiac symptoms observed in thyreoid disorders.

BIOCHEMISTRY.

Pyridoxine Deficiency.

S. R. AMES *et alii* (*The Journal of Biological Chemistry*, January, 1947) have reported that the heart and kidney tissue of albino rats maintained on a ration deficient in vitamin B_6 exhibited about 40% of the transaminase activity of similar tissues from animals receiving adequate vitamin B_6. Succinic oxidase was somewhat depressed in the deficient animals, but only to 80% to 90% of normal. The addition of pyridoxal and pyridoxamine with or without added adenosine triphosphate was without effect at the low levels tested, but the addition of pyridoxal phosphate or pyridoxamine phosphate at approximately the same low level resulted in a substantial reactivation of the transaminase activity. None of the compounds tried had any effect in reactivating the succinic oxidase system. The changes in transaminase activity parallel the changes in growth when vitamin B_6 is withheld or restored.

Enzyme Activity Alteration.

V. R. POTTER AND H. L. KLUG (*Archives of Biochemistry*, February, 1947) have examined the ability to oxidize succinate, citrate and octanoate of livers from rats fed on a diet rich in fat for periods up to twenty-one days in comparison with livers from rats which received a diet rich in carbohydrate, or a stock diet. In addition the enzyme tests were carried out on livers which had been anoxic *in situ*, after decapitation of the animals. Citrate was found to be oxidized by either whole or lysed liver cells in the presence of added adenosine triphosphate, but no significant dietary effects were noted. The succinic oxidase activity was decreased in the groups fed on diets rich in fat and carbohydrate. The octonoate oxidase activity was markedly decreased in lysed cell preparations of livers for the group fed on fat. Similar effects were noted in livers which had been anoxic for twenty to thirty minutes. Preparations from the other groups showed little loss in octanoate oxidase activity when lysed.

Œstrone.

P. GYÖRGYI *et alii* (*Archives of Biochemistry*, January, 1947) have demonstrated that œstrone shows a small but definite lypotropic effect when fed at a level of 30γ per day to intact and castrated female rats receiving a diet which produces fatty livers. When œstrone is used with methionine it augments greatly the lipotropic action of the latter and essentially normal liver fat values are obtained. No explanation is offered for this action.

Nutritional Hypoproteinæmia.

M. B. BIELER *et alii* (*The Journal of Laboratory and Clinical Medicine*, February, 1947) have studied various characteristics of specimens of serum protein from 29 individuals. Seven were from apparently normal healthy adults; fourteen were from hospital patients with various diseases; and eight were from patients with hypoproteinæmia associated with nutritional anæmia but showing no evidence of infection. Electrophoretic analysis demonstrated that the specimens from the healthy individuals compared closely with the normal values recorded by other investigators. The specimens from the patients with various diseases showed the abnormalities usually observed in those diseases, while the specimens from the patients with anæmia and hypoproteinæmia differed from the normal only by a slight relative decrease in the amount of albumin present. Complement titres, opsonic indices and anti-sheep hæmagglutinin titres of all sera showed no significant variation from the established normal values. The gradual depletion of serum protein levels which follows chronic uncomplicated malnutrition is probably a relative depletion of all types of protein distinguishable by electrophoretic analysis. Certain portions of the globulins appear to be maintained. This fact may afford a partial explanation of the resistance to infection shown by some persons who are hypoproteinæmic because of dietary deficiency.

Anæmia of Infection.

M. M. WINTROBE *et alii* (*The Journal of Clinical Investigation*, January, 1947) have studied the uptake of radioactive iron, injected intravenously, in iron-deficient and in pyridoxine-deficient pigs, and in such animals when inflammation was produced by various means. For this purpose, two different quantities of iron were used, one corresponding to the amount assumed to be absorbed daily from the diet, the other corresponding to the estimated amount derived from normal hæmoglobin catabolism. These quantities were selected in order to test the functional capacity of the hæmopoietic system. It has been shown by the isolation of hæmin that the radioactive iron appearing in the blood is present in the hæmoglobin moiety. The uptake of radioactive iron is rapid and complete in iron deficiency; slow and even negligible, if large doses are used, in pyridoxine deficiency; and intermediate, between these extremes, in normal animals. In spite of the pronounced avidity of the iron-deficient animal for iron, in the presence of inflammation the uptake of iron is markedly impaired. In pyridoxine deficiency the rapid and efficient uptake of iron, which follows the administration of pyridoxine, is markedly reduced by the presence of infection. It is concluded that the anæmia of infection is caused by impaired hæmoglobin production. Anæmia does not appear at once, however, for it is only when outworn red cells must be replaced that the defect is noticeable. Patients with anæmia of chronic infection have been subjected to continuous intravenous infusions of iron for periods as long as seventy-two hours. Considerably more iron was required to maintain a normal plasma iron level than would be expected from the results of a single intravenous injection of iron. The higher the plasma iron value desired, the more inefficient was the infusion. In neither case did the infusion of iron result in increased hæmoglobin formation. Evidence has been presented that some iron is capable of entering the erythrocytes as hæmoglobin in the anæmia of chronic infection. Since even very intensive iron therapy is ineffective, it follows that iron is not the limiting factor in the production of the anæmia, even though diversion of iron from the plasma does occur, probably mostly to the ordinary storage tissues like the liver.

Nitrogen Balance.

C. RIEGEL *et alii* (*The Journal of Clinical Investigation*, January, 1947) have found that surgical patients after gastric or cranial operations were usually in a state of negative nitrogen balance for the first five post-operative days on the dietary regimen customarily followed. Such patients require a greater intake of dietary nitrogen and of total Calories than do normal individuals to keep them in nitrogen equilibrium for the first five post-operative days. By an increase in the nitrogen intake to 0·30 gramme per kilogram, and the caloric intake to 30 Calories per kilogram daily, or over, patients fed by mouth or tube were usually maintained in nitrogen equilibrium. Hydrolysed casein, combined with carbohydrate, was equally as effective as whole protein when administered by the same routes. The variations in fæcal nitrogen were large; they are an important part of the study of the nitrogen balance of patients in the early post-operative period, especially when tube feedings are used. The plasma or serum protein concentrations were not an accurate index of the effect of a nutritional regimen on the nitrogen equilibrium of patients in the post-operative period.

Cholesterol.

K. BLOCH *et alii* (*The Journal of Biological Chemistry*, March, 1946) have incubated slices of rat liver aerobically in phosphate buffer in the presence of D_2O, deutero-acetate or acetate containing deuterium in the methyl group and C^{13} in the carboxyl group. The cholesterol isolated from slices incubated with D_2O contained deuterium, and both deuterium and C^{13} after incubation with isotopic acetate, demonstrating the in-vitro synthesis of cholesterol. No synthesis took place under aerobic conditions, in preparations of disintegrated liver, nor in slices of kidney, testes, spleen or gastro-intestinal tract. The fatty acids isolated from liver slices in which isotopic cholesterol had been formed contained small but significant concentrations of deuterium.

Bibliography of Scientific and Industrial Reports.[1]

THE RESULTS OF WAR-TIME RESEARCH.

During the war a great deal of research was carried out under the auspices of the Allied Governments. It has been decided to release for general use a large proportion of the results of this research, together with information taken from former enemy countries as a form of reparations. With this end in view, the United States Department of Commerce, through its Publication Board, is making a weekly issue of abstracts of reports in the form of a "Bibliography of Scientific and Industrial Reports". This bibliography is now being received in Australia, and relevant extracts are reproduced hereunder.

Copies of the original reports may be obtained in two ways: (a) Microfilm or photostat copies may be purchased from the United States through the Council for Scientific and Industrial Research Information Service. Those desiring to avail themselves of this service should send the Australian equivalent of the net quoted United States price to the Council for Scientific and Industrial Research Information Service, 425, St. Kilda Road, Melbourne, S.C.2, and quote the PB number, author's name, and the subject of the abstract. All other charges will be borne by the Council for Scientific and Industrial Research. (b) The reports referenced with an E number may be obtained in approved cases without cost on application to the Secondary Industries Division of the Ministry of Post-War Reconstruction, Wentworth House, 203, Collins Street, Melbourne, C.1. Copies of these are available for reference in public libraries.

Further information on subjects covered in the reports and kindred subjects may be obtained by approaching the Council for Scientific and Industrial Research Information Service, the Secondary Industries Division of the Ministry of Post-War Reconstruction, or the Munitions Supply Laboratories (Technical Information Section), Maribyrnong, Victoria.

PB 41052. COPE, OLIVER, *et alii*. Burns. Monthly progress report Nos. 1-30. April, 1942, to October, 1945. 50 pp. Price: Microfilm, $1.00; Photostat, $4.00.

These progress reports cover various phases of the study and therapy of burns. The investigation includes a study of methods for the treatment of burned areas; effect of hormones upon flow of lymph from the burned legs of a dog; metabolic study of clinical infections including burns; protein, electrolyte, and fluid balance of extensively burned animals; early excision and grafting of deep burns under prophylactic penicillin; use of radioactive dyes and isotopes in the study of burns; pathological physiology of traumatic wounds; bacterial toxæmia and shock. A few tables are included. Report 9 will not reproduce well. These progress reports (Contracts 102 and 307) cover work performed under the auspices of the Committee on Medical Research of the Office of Scientific Research and Development.

PB 41058. CRAIG, RODERICK, AND HOSKINS, W. M. Mode of action of DDT. Monthly progress report Nos. 1-2. August-October, 1945. 2 pp. Price: Microfilm, $1.00; Photostat, $1.00.

Progress report 1 mentioned a colorimetric analysis of DDT used in the treatment of DDT and several related compounds. The recovery of DDT and related compounds added to insect tissue was being studied but not reported upon herein. Mention is made in the next report of the use of calcium salts as a means of lessening or eliminating the toxic effects of DDT. Calcium chloride was tested on the American roach and sarcophagid fly larvæ. These progress reports cover work performed under the auspices of the Committee on Medical Research of the Office of Scientific Research and Development (Contract OEMcmr-546, symbol M-6001).

PB 41039. DE GRAFF, ARTHUR C. Treatment of schistosomiasis. Progress report Nos. 1-8. October, 1944, to November, 1945. 29 pp. Price: Microfilm, $1.00; Photostat, $2.00.

These progress reports describe the testing of various compounds in the treatment of schistosomiasis. Mice and other animals were injected intraperitoneally with cercariæ (chiefly of *Schistosoma mansoni*) and later autopsied. In the later experiments, the distribution as well as the number of worms in the mouse was noted. It was found that the antimonials drive most of the worms into the liver, while the organic non-antimony drugs leave most of the worms in the mesenteries. Some of the drugs showed great promise in the treatment of schistosomiasis. Various tables record the efficiency of the drugs tested. These progress reports cover work performed under the auspices of th Committee on Medical Research of the Office of Scientific Research and Development (Contract OEMcmr-469).

PB 40969. DIETZ, VICTOR H. Study of materials and processes for artificial replacement of mutilated parts of the body. Monthly progress report No. 13 (final report), May-June, 1943. July, 1943. 2 pp. Price: Microfilm, $1.00; Photostat, $1.00.

This final report summarizes the development of materials for prosthetic appliances. None of the materials tested were wholly satisfactory in their current form. Compound latex (235V), however, possessed the least objectionable features, and it was felt that if this compound was improved in various respects it might be satisfactory for certain appliances. The properties of this latex are listed. This final report covers work performed under the auspices of the Committee on Medical Research of the Office of Scientific Research and Development. The report is by Victor H. Dietz, Dental Corps, U.S. Army. See also PB 40965, under Roger G. Miller, and PB 40967-8, under D. H. Cash and C. N. Adams.

PB 40467. EAGLE, HARRY. The toxicity of calomel ointment. Progress report. July, 1943. 7 pp. Price: Microfilm, $1.00; Photostat, $1.00.

This report consists of seven tables and footnotes dealing with the effect of calomel and of phenylarsenoxide derivatives on syphilis in rabbits. Following are the headings of the tables: (1) The toxicity of calomel ointment. (2) Prophylactic activity of calomel ointment (lanolin-petroleum base) applied one hour after intracutaneous inoculation with 10^8 *S. pallida*. (3) Prophylactic efficacy of calomel ointment applied by inunction (4 minutes) over superficial skin incision inoculated with *S. pallida*. (3A) Prophylactic efficacy of calomel ointment applied by inunction but not over inoculated area. (4) The effect of the concentration of calomel ointment on its prophylactic efficacy. (5) The prophylactic efficacy of 4-$CONH_2$ phenylarsenoxide in relation to the time of administration and the concentration of arsenical. (6) The prophylactic efficacy of 4-$CONH_2$ phenylarsenoxide applied by inunction, but not over the inoculated area. This report is related to PB 40353.

PB 40361-PB 40362. FIROR, WARFIELD M., AND BLISS, ELEANOR A. Control of (wound) infections. Progress reports, Nos. 1-5, and final report. May, 1943, to March, 1944. PB 40362. (Progress report, Nos. 1-5.) May, 1943, to February, 1944. 11 pp. Price: Microfilm, $1.00; Photostat, $1.00. PB 40361. (Final report.) March, 1944. 35 pp. Price: Microfilm, $1.00; Photostat, $3.00.

A study was made of the effect of local therapy with various agents upon chronic infections such as vascular ulcers, empyema and osteomyelitis, upon abscesses, and upon acute infections in wounds and burns. An unsuccessful attempt was made to produce in rabbits infected wounds suitable for local therapy. The results of miscellaneous studies are reported. These include the development *in vivo* of resistance to sulphonamides by hæmolytic streptococci; the relative susceptibility of coagulase positive and coagulase negative staphylococci to penicillin and to tyrothricin; the toxicity of penicillin for human tissues in culture; and the bacteriostatic properties of homosulphanilamide ("Marfanil" or *a*-amino-*p*-toluene sulphonamide). As far as local therapy is concerned, there is no one chemotherapeutic agent which is outstanding in the control of infections of wounds of the soft parts and of chronically infected ulcers. Penicillin and homosulphanilamide, however, appear most deserving of further trial. The reports of PB 40362 give the details of the clinical studies. PB 40361 consists of the abstract of the final report and of the final report itself or the "Infected Wounds and Burns Report No. 20", dated March 15, 1944. Tabulated data are included. These reports cover work performed under contract with Johns Hopkins University (Contract No. OEMcmr-300).

PB 40353. FLEMING, WILLIAM L. Relative prophylactic effectiveness against syphilis of ointments containing calomel in different particle size. Progress reports, Nos. 1-6, 8-15. May, 1943, to September, 1945. 22 pp. Price: Microfilm, $1.00; Photostat, $2.00.

The earlier progress reports deal with the relative prophylactic effectiveness against syphilis (in rabbits) of ointments containing calomel in different particle size. All of the ointments were prepared in the same base: half hydrous lanolin and half white petrolatum. Three different particle sizes, each in 5% and 30% concentration, were used. The calomel ointment was applied one hour after the rabbits had been inoculated with *Treponema pallidum*. The animals were examined twice each week thereafter. The fourth report mentions preparations for testing the prophylactic effective-

[1] Supplied by the Information Service of the Council for Scientific and Industrial Research.

ness against syphilis in rabbits of several phenylarsenoxide derivatives. The Nichols strain of syphilitic testicular emulsion was injected into the rabbits, followed four hours later by the application of various concentrations of one of the derivatives under test in propylene glycol. Concentrations of 0·8%, 0·4%, 0·2%, 0·1% and 0·05% were tested with each drug. Starting with Report 8, the reports deal with tests to determine the minimal curative dose of penicillin and to compare the relative efficacy of penicillin in early and late stages of syphilis in rabbits. The Nichols strain of *Treponema pallidum* was used in the inoculations. Five different dosage schedules were set up, the doses being administered every three hours for four days. Treatments for the early stage were started six weeks after inoculation and for the late stage, six months. The reports contain a few tables. The first report will not reproduce well. These reports were prepared under the auspices of the Committee on Medical Research, Office of Scientific Research and Development (Contract No. 2338).

PB 40352. FRANZ, VIRGINIA K. The study of absorbent pledgets, membranes *et cetera* in surgical procedure. Progress reports, Nos. 1-10. January, 1944, to July, 1945. 36 pp. Price: Microfilm, $1.00; Photostat, $3.00.

These progress reports describe the response of various animal tissues to oxidized cellulose made of cotton, gauze or paper in the early days of implantation. Tables record absorption time and the condition of the wounds. The use of the different types of pledgets in bone repair was also studied. The absorption of fibrin foam, gelatin sponges and oxidized foam was compared. These substances were all found to be relatively non-irritating. A report describes tests to determine the tissue reaction to collagen membrane. Its absorption and irritant effect as compared with catgut was noted. Several clinical cases describe the use of oxidized gauze in hæmostasis in humans. Some notes describe the use of various pledgets in other hospitals. These progress reports cover work performed under the auspices of the Committee on Medical Research of the Office of Scientific Research and Development (Contract No. OEMcmr-388).

PB 40365. FURSTENBERG, A. C., *et alii*. Physiology of cold. Progress reports, Nos. 1-6. March-December, 1943. 14 pp. Price: Microfilm, $1.00; Photostat, $1.00.

These progress reports investigate the responses of the human being to cold environments. The experiments were conducted in an insulated air-conditioned room and in a respiration chamber. The responses of nude, fasting, recumbent subjects were recorded. Tables show the amount of heat gained or lost by the subjects when breathing warm or cold air. Other tables record the fasting, resting heat production for 24 hours and for the week. The average skin and toe temperatures when the air temperatures were 25·5° C. and 14·5° C., respectively, are also shown. Fuller reports on some phases of the investigation of cold are given in PB 40366-PB 40368 under L. H. Newburgh and C. R. Spealman. These progress reports cover work performed at the Naval Medical Research Institute, Bethesda, Maryland, under contract with the University of Michigan Medical School (Contract No. OEMcmr 269).

PB 40460. GERSH, ISIDORE. Treatment of burns. Monthly progress reports, Nos. 1-6. July, 1942, to April, 1943. 7 pp. Price: Microfilm, $1.00; Photostat, $1.00.

These progress reports deal with the investigation of protein coagulants and pain inhibitors for use in the treatment of burns. The coagulants considered include sodium cellulose sulphate, several sulphonic acids and several syntans. Results of the study of these compounds are briefly noted. Various chemicals were also studied regarding the inhibition of pain. A list of alcohols in the order of decreasing anæsthetic power is given. Aniline was found to be as good a protection against chemical pain as some of the best hydroxy-polar compounds; sulphanilamide was found to be a good inhibitor of pain previously induced. These progress reports cover work performed under the auspices of the Committee on Medical Research of the Office of Scientific Research and Development.

PB 40486. GIBSON, JOHN G., II, *et alii*. Bicarbonate buffered citrate-dextrose for cell resuspension. Low volume ACD (Rapoport's formula) for preservation of whole blood. Red cells resuspended in 10% corn syrup and in acidified citrate-dextrose pH 5·1 (Hughes). Bimonthly progress report, No. 28. December, 1945. 4 pp. Price: Microfilm, $1.00; Photostat, $1.00.

In the first experiment the test solution was found to afford adequate preservation for at least fourteen days. The second experiment tested the value of low volume ACD. The preservation of whole blood afforded by this low volume ACD solution was as good as that obtained with ACD-1 in a 1-4 ratio; and of packed cells better than that obtained with the higher dilution acid citrate-dextrose. The third experiment tested the value of the 10% corn syrup in acidified citrate-dextrose solution pH 5·1 (Hughes's formula). The quantity of cells transfused, the days of storage, the percentage of survival by radioactive iron and by the agglutination technique, are shown in Table 1. None of the bloods more than fifteen days old, which were preserved by this method, were good transfusions. This progress report covers work performed under the auspices of the Committee on Medical Research of the Office of Scientific Research and Development (Contract OEMcmr-131).

PB 40479. GIBSON, JOHN G., II, *et alii*. Comparison of ACD-1 and Alsever's solution pH 6·8 as preservatives for whole blood. The effect of storage at different temperatures on survival of cells taken as whole blood in ACD-1 and Alsever's solution pH 6·8. Bimonthly progress report, No. 21. October, 1944. 2 pp. Price: Microfilm, $1.00; Photostat, $1.00.

Experiments were carried out to show the effect on cell survival of different storage temperatures for various periods of time, and the effect of subsequent refrigeration after storage at varying temperatures on whole blood taken into ACD-1 and Alsever's solution. In each experiment radioactive blood from the same donor was taken into both solutions, and aliquots of each were transfused after storage for equal periods under identical temperature conditions. The results are noted in a table. ACD-1 appeared to be a better preservative for red cells taken as whole blood than Alsever's. This report covers work performed under the auspices of the Committee on Medical Research of the Office of Scientific Research and Development.

PB 40481. GIBSON, JOHN G., II, *et alii*. Comparison of Alsever's solution and ACD-1 as a preservative of whole blood during unrefrigerated aerial transportation to the Eastern Operations Theatre. Bimonthly progress report, No. 23. February, 1945. 1 p. Price: Microfilm, $1.00; Photostat, $1.00.

Full bleedings were taken from five donors into Alsever's solution and from five donors into ACD-1. All donors were blood group A, Rh-positive. The solutions were precooled and refrigerated for from four to ten hours before packing for shipment. The bloods were eleven days *en route* at uncontrolled temperatures ranging beyond 15° C. Two bloods in Alsever's were transfused at 19 and 23, and two in ACD-1 at 20 and 24 days after drawing. All recipients were group A, Rh-positive. The survival of cells, as determined by radioactive iron, was less than 30% in all four transfusions. It was concluded that the bloods were unfit for transfusion. This progress report covers work performed under the auspices of the Committee on Medical Research of the Office of Scientific Research and Development (Contract OEMcmr-131).

PB 40480. GIBSON, JOHN G., II, *et alii*. Post-transfusion survival of whole blood in ACD-1 after refrigerated transportation and subsequent refrigerated storage. Bimonthly progress report, No. 22. December, 1944. 2 pp. Price: Microfilm, $1.00; Photostat, $1.00.

Whole radioactive blood drawn from ten Group O (universal) donors into ACD-1 (in standard 600 c.c. Navy vacuum bottles) was refrigerated and transported a distance of 6,000 miles. The shipment was in flight 22 hours, in mechanical refrigerators 34 hours, and *en route* a total of 122 hours. On arrival at the destination the bloods were refrigerated at 4° C. until transfused. Each blood was transfused into an individual recipient whose blood was Group A, Rh-positive (except one Group O, Rh-positive). Transfusion was carried out 7, 8, 11, 12, 15, 16, 20, 21, 25 and 26 days after the blood was drawn. The percentage of cell survival of all transfused cells was not less than 86 for bloods transfused up to 21 days after drawing. It was doubtful if the 25 day and 26 day old blood could be considered transfusible. This progress report covers work performed under the auspices of the Committee on Medical Research of the Office of Scientific Research and Development (Contract OEMcmr-131).

PB 40482. GIBSON, JOHN G., II, *et alii*. Resuspended packed red cells. Bimonthly progress report, No. 24. April, 1945. 3 pp. Price: Microfilm, $1.00; Photostat, $1.00.

This report describes the effect on the storage of red blood cells when fraction IV–3, 4 of human protein plasma is added, fraction IV–3, 4 being rich in α and β globulins. The report describes the preparation of several solutions containing this fraction. Lot 151 was prepared with a protein concentration of 1·75 and 3·5 grammes of protein per 100 c.c., pH 6·9, and lot 301 was prepared with the same concentrations of protein but with a pH of 4·0. These solutions were added to resuspended red blood cells obtained from Group O, Rh-positive donors. The results are tabulated. In all cases the cell survival did not fall below 70%, lot 301 being considerably better. It appears that the addition of fraction IV–3, 4 to the diluent improves cell preservation. This report covers work prepared under the auspices of the Committee on Medical Research of the Office of Scientific Research and Development (Contract OEMcmr-131).

British Medical Association News.

MEDICO-POLITICAL.

A MEETING of the Victorian Branch of the British Medical Association was held at the Medical Society Hall, East Melbourne, on June 4, 1947, DR. A. E. COATES, O.B.E., the President, in the chair.

The Future of Medicine.

DR. DOUGLAS ROBB, of Auckland, New Zealand, read a paper entitled "The Future of Medicine" (see page 61).

DR. ARTHUR E. BROWN opened the discussion by observing that he considered the meeting to be a very important one and that they had listened to a delightful and very informative address from Dr. Robb. Dr. Brown would have liked to have the opportunity to give more thought to the subject matter of his contribution to the discussion, but proposed to refer to each of the two parts of the opening address, namely, the differences in the field of work between specialists and general practitioners on the one hand and the political aspects of the future of medicine on the other.

Dr. Brown went on to say that he agreed completely with the differentiation that Dr. Robb had drawn between the activities of specialists and general practitioners. The medical course was over-loaded as a preparation for life for doctors, but they must be thoroughly trained and the curriculum could not be cut. In the sister profession of nursing the experiment had been tried for training up to a certain point for ordinary duties with courses of supplementary training for higher duties. Dr. Brown could not see how two standards of training for doctors could be arranged. Moreover, speaking as a country surgeon of twenty-five years' experience, he knew that doctors in the country had to be competent to handle unexpected contingencies and emergency work. To do that efficiently they needed the wealth of clinical experience involved in undertaking work of the greatest variety, even though they might be aware that some city surgeon might do a particular operation more successfully for an individual.

Turning to the political side, Dr. Brown said that it would take a brave man to predict the future of medicine. He realized that he was known as an ardent advocate of salaried service, but he wished it to be clearly understood that in his opinion any department type of salaried medical service would be disastrous. The "fee-for-service" scheme of medical benefits, which was the policy of the Victorian Branch, was actually operating in New Zealand, and that night they had heard about it in such a way that it was necessary to hesitate in supporting the local policy any longer.

Dr. Brown mentioned that in correspondence with the Minister of Health in New Zealand he had objected that the New Zealand scheme was so designed that the service was cheap rather than good. Politicians, however, had to do something definite in answer to the widespread demand, even though what they did might not be considered "nice" in the judgement of technical experts. Dr. Brown thought that, as an organized body, the profession should not be obstructive, but should make every effort to mould what the politicians did. They might be right to distrust politicians, but they could not stand aloof from the planning without sharing the blame when the plan fell short of what was necessary and desirable. If the profession was to stand up to the future of medicine in this country, it must take the initiative and must have constructive ideas to put forward. It was no use being conservative and refusing to cooperate in any way.

Dr. Brown completed his contribution to the discussion by saying that he had not intended to be provocative, but had said what he had said as he felt that even now it was not too late for the attitude of the profession to be changed in the direction of putting forward constructive ideas. He had greatly enjoyed Dr. Robb's address and thanked him for it heartily.

DR. A. P. DERHAM said that, like Dr. Brown, he had come quite unprepared to speak and was also conscious that he was less fitted to make a contribution to the discussion. He expressed his admiration for Dr. Robb's excellent summary of what was going on in New Zealand. He hoped that in Australia doctors would adopt a more optimistic view of the future of medical practice which he felt depended to a large extent on themselves. He asked Dr. Robb when he spoke again at the end of the discussion to give a few hard pieces of advice as to what he considered the profession could do in Australia. Though Dr. Robb might feel diffident about it, Dr. Derham felt certain that Dr. Robb must have formed some concrete ideas which might prove of great value in Australia.

Dr. Derham said that he would try to be realistic and would commence by a consideration of the background of the future. It would be wrong to establish an ideal medical scheme based on conditions in the world that had passed, only to find it unsuitable for the world of the future. He believed that great changes were in progress, comparable only with the decline and fall of the Roman Empire, the passing of the feudal age and the Renaissance. It was possible that the background that should be considered realistically was a widespread swing to the left throughout the world; some characteristics true to the tradition of the profession could be retained even in a communistic state of society.

Dr. Derham then said that he had had ample opportunity in mixed national company to consider the faults and virtues which could be regarded as racial and he had been greatly impressed by the insistence of an Englishman that the greatest Australian fault was complacency, which applied to its medical men as well as to other members of the community.

DR. KENNETH SMITH asked Dr. Robb to clarify his statement that £35,000,000 out of £100,000,000 was the cost of the social services in New Zealand. He was not clear whether the amount included the cost of pensions and social services other than the medical group. He would also like to know whether Dr. Robb mentioned the £100,000,000 as the national income of the country or whether it was the amount received by the Government in taxation. He was under the impression that Dr. Robb had said that the social services to which he was referring were costing two shillings in the pound of the total income of the nation.

Dr. Smith went on to say that it was sad to note the failure of the fee-for-service principle in New Zealand, as it might also fail if it was introduced in Australia. They had hoped that it would be the best method of payment. Under it a doctor could decide upon a suitable gross income and limit his work to earn that income and so protect himself from the evils of overwork or work unsatisfactorily carried out.

DR. ALAN PENINGTON said that he was one who had had experience of a salaried service, and it had not seemed to him to matter how he was paid, compared with the importance of the provision of the best possible service. In conversation with numerous young colleagues he was satisfied that many of them would prefer to be paid a salary, because then they would be free to carry out investigations and do the work as thoroughly as they wished without the imputation of gaining more money thereby unjustifiably. He was sure that an adequate living salary would be less restrictive than the payment of extra money for extra zeal.

DR. C. H. DICKSON asked Dr. Robb in his reply to say precisely in what directions he considered that the fee-for-service system had failed in New Zealand. It was obvious that the token system was wrong and led to the temptation of running up the bill; but it should be remembered that the New Zealand Government had offered a capitation fee of fifteen shillings and that until quite recently the fee-for-service system had cost the government fund less than that amount. Only recently the expenses had risen to over sixteen shillings per head.

Under conditions similar to those obtaining in New Zealand, an industrial practice, say in Melbourne, would be very satisfactory from the financial point of view. In many communities the doctor was seeing fifty patients daily, and at the rate of seven and sixpence per consultation the income would be high. He could not see any reason why such a practice should be poorer in quality than existing practice, as the fees, instead of being paid by the patients, would be paid out of the National Security Fund and in other respects practice would go on as usual.

DR. GERALD O'DAY wished it to be made plain that the system in New Zealand was not in any sense a socialistic scheme; it had been imposed on the people by a Labour Government and it had not been particularly beneficial. No revolutionary changes from it could be expected from the present Australian Government. It was worth a struggle to avoid a repetition in Australia of New Zealand's misfortunes, and there was no present evidence that the Government was trying to provide an improved medical service. They would make an attempt at reform inside the present precarious conditions, and it was impossible to bring about great amelioration in the service under the present changing conditions. He wished to assure his colleagues that in any struggle they made against infringement of the freedom of the profession they could rely on the fact that members of the extreme left would be behind them and would certainly oppose any cheapjack system of medicine introduced by a Labour Government.

DR. W. OSTERMEYER asked Dr. Robb to explain further what fees doctors in New Zealand received for specialist service and for operations.

DR. DAVID ROSEBY said that they owed a great debt of gratitude to Dr. Robb for his description of the New Zealand system and for the deductions he had drawn from his study of it. Dr. Roseby remembered that forty years earlier the late Professor Allen had chosen as his presidential address the subject of the nationalization of medicine, and that since then many presidents had chosen the same subject. He mentioned these facts as evidence that a great deal of thought had been given to the future of medicine.

Dr. Roseby himself had practised for a long time in an industrial area, and he would like Dr. Robb to make it clear what he meant by education of the people. In Dr. Roseby's experience the project was futile when applied to large numbers of people living under unsatisfactory conditions in little homes in a closely populated industrial area. Nothing that doctors could do would have the slightest effect on politicians in this age of vote catching. The idea of nationalizing the health service was a popular scheme and would be implemented without consideration for expert opinion. It was important, however, to make an attempt to guess what was about to happen. The world had changed and preconceived opinions must be modified. The responsible members of the profession must be prepared to reorientate their minds in the interest of the younger men. The likely possibilities seemed to be either a clinic service on a salary, a capitation scheme comparable with the existing lodge service or a fee-for-service scheme, but no one knew yet what would be decided by Parliament. In Dr. Roseby's opinion it was the business of the profession to limit its activities to the steps necessary to safeguard the freedom of practice and the right to retain intellectual independence and freedom of thought.

DR. A. E. COATES, the President, said that Dr. Robb had been telling them about the experiment in New Zealand; New Zealand lent itself to experimentation and Dr. Robb had exposed some of the faults. It was well that such an experiment should be carried out in a country of population of manageable size where mistakes could be readily rectified. It was a pity that Australian practitioners did not have years to observe the effects of the experiment in New Zealand before becoming involved in experimentation themselves, but in the long run, if they sat firmly and spoke with one voice and that voice was constructive, they would be heard, as they were in a very strong position.

On general principles it should be recognized that medical practitioners enjoyed enough prestige to influence politicians. After all it was a dangerous thing to be born; there was really a heavy mortality associated with that act. They must not be too apprehensive; they must take cognizance of things; they must not be too pessimistic or worry too much about the future.

Dr. Coates went on to say that there was a growing body of younger men with high ideals, and that the older doctors should support the opinions of the younger ones, as it was necessary to look to youth for the future. In spite of the doubts it was quite possible for youth to be able to support whatever came and to uphold honourably the ideals of the profession. Without nationalization, under existing arrangements, they could not afford to throw stones. Dr. Coates thanked Dr. Robb very heartily on behalf of the Victorian Branch for his stimulating address and invited him to reply to points raised in the discussion.

Dr. Robb, in reply, explained to Dr. Ostermeyer that specialists and surgeons charged normal fees, but the clients were entitled to obtain a refund of seven shillings and sixpence per service from the National Security Fund. He made it clear to Dr. Kenneth Smith that the £100,000,000 to which he had referred was national revenue rather than national income. He agreed with Dr. Roseby that the nationalization of medicine was no longer a controversial party political matter, so they should make any future scheme into as good a working model as possible.

To Dr. Dickson, Dr. Robb explained that the fee-for-service system was bad or had failed, in his opinion, because there was no impetus within it to make changes for the benefit of the public or to give the Government reasonable value for money spent. The doctors in New Zealand were well off and lots of them thought the fee-for-service system very good. They were tempted, however, to scamp their work and to make more money. Dr. Robb maintained that there should have been a step forward, and in the failure to take the step forward he thought that the fee-for-service scheme had failed. The medical profession should concentrate on the medical needs of the public and do its best to supply those needs.

To Dr. Derham, Dr. Robb said that he agreed that they should think of the whole business of medical services from the ground upwards and plan improvements, recasting the plan with changing conditions and then implement the desirable plan piecemeal, looking to the Government for financial assistance. In his opinion the lay people were getting on further than the profession with the medical plans. In a genuine scheme the functional answer from the profession would be a pledge of good faith, and it should be adopted at least part by part as the national scheme. All tasks of reform of this nature were so great that piecemeal parts of them should be the subject of experimentation and the pieces should be adopted finally only as they proved workable and satisfactory.

NOTICE.

THE General Secretary of the Federal Council of the British Medical Association in Australia has announced that the following medical practitioner has been released from full-time duty with His Majesty's Forces and has resumed civil practice as from the date mentioned:

Dr. H. G. Cummine, 201, Macquarie Street, Sydney (June 20, 1947).

Medical Education.

RECOMMENDATIONS AS TO THE MEDICAL CURRICULUM BY THE GENERAL MEDICAL COUNCIL.

THE leading article in this issue deals with recommendations made recently by the General Medical Council of Great Britain on the medical curriculum. The recommendations are published below *in extenso*.

I. RECOMMENDATIONS AS TO GENERAL AND PRE-MEDICAL EDUCATION.

The following examinations should be passed by every student before admission to the Medical Curriculum proper:

(1) A recognized preliminary examination in General Education.

The minimum standard of General Education required of an applicant should be that attested by the possession of a certificate bearing evidence that he has passed a Matriculation or Entrance Examination of a University of Great Britain and Northern Ireland, or of Eire, or other examination recognized by such a University, or by a Medical Corporation, as equivalent thereto.

(2) An examination or examinations in the following subjects conducted or recognized by the Licensing Body concerned:

(*a*) *Physics* (theoretical and practical); the elementary Mechanics of solids and fluids; the elements of Heat, Light, Sound Electricity and Magnetism.

(*b*) *Chemistry* (theoretical and practical); the fundamental principles of physical, inorganic and organic Chemistry.

(*c*) *Biology* (theoretical and practical); the fundamental facts of vegetable and animal structure, life-history, and function; the elements of Genetics; an introduction to the study of Embryology.

NOTE 1.—Applicants may offer themselves for examination in Biology either before or after admission to the Medical Curriculum proper.

NOTE 2.—The elements of Genetics may alternatively be taken during the Period of Pre-Clinical Studies.

II. RECOMMENDATIONS AS TO PROFESSIONAL EDUCATION.

A.—Period of Pre-Clinical Studies.

The numbers of students commencing the Medical Curriculum proper should be forwarded as soon as possible after their admission by the Dean or other authorized officer of each Medical School to the General Medical Council.

The Period of Pre-Clinical Studies should be a period of not less than five academic terms.

The instruction given during this period should be in *Human Anatomy* and *Human Physiology*, including:

(1) Dissection of the whole body.

(2) Anatomy of the living body, including its radiological examination.

(3) The principles of Physiology, the Physics and Chemistry of bodily functions studied so far as possible in the human subject.

(4) The use of instruments employed in diagnosis (with demonstrations on the living subject).
(5) Histology.
(6) Elements of Human Embryology.
(7) Elements of Genetics.
NOTE.—This subject may be taken with Biology.
(8) Elements of Psychology.

Throughout the Period of Pre-Clinical Studies every effort should be made to secure close correlation between Anatomy and Physiology, and to stress wherever opportune the importance of these subjects in their clinical application. During this period the attention of the student should be directed to normal human growth and development.

B.—Transitional Period of Study.

1. *Introductory Clinical Course.*—A course of instruction in the Methods of Clinical Examination, extending over a period of three months introductory to the study of Medicine and of Surgery, should be provided.

2. Instruction in the following subjects should be given, at the discretion of the authorities of Licensing Bodies and of Medical Schools, either during the Period of Pre-Clinical Studies, or during the period of the Introductory Clinical Course, or partly during the former and partly during the latter period:

(1) Elements of *Pathology and Bacteriology.*
(2) Elements of *Pharmacology.*

C.—Period of Clinical Studies.

Students should not be admitted to the Period of Clinical Studies until they have satisfied the Examiners in the subjects of the Period of Pre-Clinical Studies.

The Period of Clinical Studies should cover not less than thirty-three months, subsequent to the completion of the Transitional Period of Study.

1. *Medicine.*—Instruction should include:

(1) Systematic instruction in the principles and practice of Medicine.

(2) A medical appointment in the Hospital wards and in a medical out-patient or equivalent department for a period of six months in all, including not less than one month in residence in Hospital, or conveniently near by.

(3) Instruction in the following subjects:

(*a*) Acute Infectious Diseases.
(*b*) Tuberculosis.
(*c*) Diseases of the Skin.
(*d*) Venereal Diseases.
(*e*) Radiology in its application to Medicine.
NOTE.—Instruction in these subjects should be directed to the attainment of sufficient knowlerge to ensure familiarity with common conditions, their recognition and treatment.
(*f*) Dietetics.
(*g*) Nursing.
(*h*) Physiotherapy.

2. *Surgery.*—Instruction should include:

(1) Systematic instruction in the principles and practice of Surgery.

(2) A surgical appointment in the Hospital wards and in a surgical out-patient or equivalent department for a period of six months in all, including not less than one month in residence in Hospital, or conveniently near by.
NOTE.—During the six months for which he holds a surgical appointment the student should not spend more time in the operating theatre than is required for the attainment of sufficient knowledge to ensure familiarity with common surgical conditions, their recognition and treatment.

(3) Practical instruction in Minor Operative Surgery on the living.

(4) Instruction in the following subjects:

(*a*) Diseases of the Ear, Nose and Throat.
(*b*) Diseases of the Eye.
(*c*) Orthopædics.
(*d*) Dental Diseases.
(*e*) Radiology in its application to Surgery.
NOTE.—Instruction in these subjects should be directed to the attainment of sufficient knowledge to ensure familiarity with common conditions, their recognition and treatment.

(5) A course of theoretical and practical instruction in the administration of Anæsthetics.

3. *Midwifery and Gynæcology.*—Instruction should include:

(1) Systematic instruction in the principles and practice of Midwifery and Gynæcology, including the Anatomy, Physiology and Pathology of pregnancy and labour.

(2) Clinical instruction in Midwifery, Infant Hygiene and Gynæcology, and attendance on the practice of a Maternity Hospital or of the maternity wards of a General Hospital, and on in-patient and out-patient gynæcological practice, for a period of six months.
NOTE.—This period should be later than the periods during which the student holds clinical appointments in Medicine and Surgery, and should whenever possible be earlier than the period during which he holds a clinical clerkship in Pædiatrics.

(3) Throughout the period of six months the student should receive practical instruction in the wards and in the out-patient department of the Hospital in the principles of:

(*a*) Ante-natal and post-natal care.
(*b*) The management of the puerperium.
(*c*) The care of the new-born infant

(4) During the period of six months the hours of clinical instruction should be so allotted that at least two-thirds of such hours are devoted to instruction in Midwifery and Infant Hygiene (as distinct from Gynæcology), including instruction in the subjects referred to in the foregoing Recommendation (3).

(5) Not less than two months of the time devoted to clinical instruction in Midwifery should be spent by the student in residence either in a Maternity Hospital, or in a Hostel attached to a Maternity Hospital or the maternity wards of a General Hospital, and during these two months clinical instruction should be devoted to Midwifery and Infant Hygiene.

(6) During the two months which he spends in residence, the student should attend not less than twelve cases of labour under proper supervision, the first five at least in the lying-in Hospital or wards.

(7) No student should be admitted to a Final or Qualifying Examination in Midwifery unless he produces a certificate, signed by a responsible Medical Officer on the staff of the Teaching Hospital or Medical School (who should describe his official position), which satisfies the authorities of the Licensing Body or Bodies by or on behalf of which the Examination is held that:

(*a*) The student has attended such numbers of cases of labour, not being less than the numbers specified in these Recommendations, as may be prescribed by the regulations of the Body or Bodies (i) in the lying-in Hospital or wards specified in the certificate, and (ii) in the homes of the patients;
(*b*) An adequate history, including when possible observations on ante-natal and post-natal conditions, of each case referred to in the certificate has been written by the student and submitted to and signed by the Obstetric Officer of the Hospital under whose supervision the student attended the case;
(*c*) In each case to which the certificate relates the student has been in personal attendance on the patient during the whole course of labour;
(*d*) The student is not credited with any case which appears on the certificate of more than one other medical student, or on that of more than one pupil midwife.

4. *Pædiatrics.*—Instruction should include:

(1) Systematic instruction in the principles and practice of Pædiatrics.

(2) A clinical clerkship in Pædiatrics for a period of three months, during one of which the student should if possible reside in Hospital, or conveniently near by.

(3) Instruction in the care of the new-born infant and in the diseases of the neo-natal period, given during the course of instruction in Midwifery.

(4) Attendance at not less than six sessions in a Child Welfare Centre.
NOTE.—This attendance should, whenever possible, be concurrent with the course of instruction in the care of the new-born infant and in the diseases of the neo-natal period, and should take place before the student holds a clinical clerkship in Pædiatrics.

(5) Attendance if possible at a number of School Medical Clinics and Child Guidance Clinics sufficient to familiarize the student with the work of these departments.

5. *Psychiatry.*—(1) Instruction in Psychiatry should be carried out mainly in a psychiatric out-patient department, where neuroses and psychoneuroses can be studied, but clinical demonstrations should also be given at a Mental Hospital and at a Mental Deficiency Institution.

(2) A course of systematic lectures should be given.

NOTE.—During his study of all clinical subjects the attention of the student should be continuously directed by his teachers to the importance of the inter-relation of physical and psychological aspects of disease.

6. *After-Care and Rehabilitation.*—In all courses specified in the foregoing Recommendations instruction should be given in the methods of after-care and rehabilitation appropriate to the particular subject.

7. *Social Medicine and Public Health.*—(1) Instruction should be given in:

(*a*) The principles of Preventive Medicine, including Epidemiology.

(*b*) The influence of heredity and environment, including occupation, on health and disease.

(*c*) The principles of Health Education.

(*d*) The functions of Central and Local Authorities and voluntary organizations, and the nature and objects of the Public Health and Medical Services they administer.

(2) During courses of instruction in clinical subjects the attention of the student should be continuously directed by his teachers to those aspects of Medicine as a whole which are now (1947) often comprehensively described as "Social Medicine", by such means as:

(*a*) Utilization for purposes of instruction of the Public Health and Social Welfare Services of the Local Authority or Authorities in any area or areas reasonably accessible to students of the School.

(*b*) Utilization for purposes of instruction of any Health Centres established as part of a Public Medical Service in any area or areas reasonably accessible to students of the School.

(*c*) Utilization for purposes of instruction of such ancillary workers as:

(i) Almoners.
(ii) Health Visitors.
(iii) Psychiatric Social Workers.
(iv) Other Social Workers.

8. *Pathology and Bacteriology.*—(1) Instruction in Pathology and Bacteriology should be given throughout the Period of Clinical Studies.

(2) This instruction should include instruction in:

(*a*) General and Special Pathology.
(*b*) Clinical and Chemical Pathology.
(*c*) General and Clinical Bacteriology.
(*d*) Immunology and Immunization.[1]

(3) As part of the instruction, the student should receive practical instruction in the conduct of autopsies, and should act as a post-mortem clerk in at least ten cases.

9. *Pharmacology and Therapeutics.*—During the Period of Clinical Studies instruction should be given in Pharmacology (including Practical Pharmacy) and in Therapeutics (including Prescribing).

10.—*Forensic Medicine.*—Instruction in Forensic Medicine and its application to practice should be given during the later stages of the Period of Clinical Studies.

11. *Legal and Ethical Obligations of Registered Medical Practitioners.*—Instruction should be given during the later stages of the Period of Clinical Studies in the statutory obligations of registered medical practitioners, and in the principles of Medical Ethics. Attention should be called to all Notices as to professional conduct issued by the General Medical Council.

III. RECOMMENDATIONS AS TO PROFESSIONAL EXAMINATIONS.

A.—General Conduct of Examinations.

1. Candidates in all their examination work should be carefully supervised.

2. The examination in each subject should include written and oral tests, and, in the case of clinical subjects, a clinical test.

3. In all written examinations the questions in each subject should be approved by all the Examiners adjudicating on the written papers in that subject.

4. At least two Examiners should participate in the adjudication on all written papers.

5. Sufficient time should be assigned to practical work to ensure that the candidate's knowledge can be thoroughly tested.

6. The examinations in all clinical subjects should include adequate clinical and practical examinations.

7. All clinical examinations should be held in properly equipped hospitals or examination halls. There should be provided for all clinical examinations a sufficient number and variety of patients.

8. In all clinical examinations the Examiners should observe the candidate making his examination of the patient, or the candidate should be made to demonstrate his methods to them.

9. In all oral and clinical examinations at least two Examiners should be present at the examination of each candidate, and the marks should be a joint adjudication.

10. In assessing marks Examiners should be empowered to take into account the duly attested records of the work done by the candidate throughout his course of study in the subject of the examination.

11. The percentage for a pass in each subject should be not less than fifty.

12. A candidate rejected in any subject of an examination should, before he is re-admitted to examination therein, be required to produce satisfactory evidence that he has during the interval pursued the study of the subject in which he was rejected.

B.—Appointment of, and Circulation of Information to, Examiners.

13. It is desirable that Examiners should be appointed or re-elected for at least three consecutive years.

14. Every Examiner should upon his appointment receive a copy of these Recommendations, and every Examiner in Medicine, Surgery, or Midwifery and Gynæcology, or in any branch of any of these subjects, should upon his appointment receive a copy of the latest General Report of the Inspector in the relevant subject.

C.—Scope of Examinations in Subjects of Period of Clinical Studies.

15. Candidates should be required to pass examinations in the following subjects:

(1) Medicine, Surgery, and Midwifery and Gynæcology, including the sub-divisions of these subjects specified in the foregoing Recommendations as to Professional Education.

(2) Pædiatrics (including Infant Hygiene and Child Welfare), Psychiatry and Therapeutics.

The examinations in these subjects may be separate examinations, or may form part of the examinations in Medicine, Surgery, and Midwifery and Gynæcology.

(3) Social Medicine and Public Health, Forensic Medicine, Pathology and Bacteriology, Pharmacology.

D.—Final or Qualifying Examination in Medicine, Surgery, and Midwifery and Gynæcology.

(i) Admission to Examination.

16. No part of the Final or Qualifying Examination in Medicine, Surgery, and Midwifery and Gynæcology should be taken before the end of thirty months of clinical study, and the Examination should not be completed before the end of the Period of Clinical Studies.

(ii) Conduct of Examination.

17. The three portions of the Final or Qualifying Examination in Medicine, Surgery, and Midwifery and Gynæcology should not be further sub-divided into sections which may be entered for or passed separately.

18. Compensation in respect of marks as between the three different portions of the Final or Qualifying Examination, namely, Medicine, Surgery, and Midwifery and Gynæcology, is contrary to the intention of the Medical Act, 1886.

19. In the clinical examinations an uninterrupted period of at least one hour in Medicine, and at least half an hour in Surgery, should be allowed to the candidate for the examination of, and report on, his principal case. Any interrogation of the candidate by the Examiners should take place immediately after his examination of the patient, so that the candidate may be called upon to demonstrate his findings.

20. In Medicine, in Surgery, and in Midwifery and Gynæcology, no candidate should be allowed to pass who fails to obtain fifty per cent. of the marks assigned to the clinical examination.

[1] Instruction in the theory and practice of Vaccination as a branch of Medicine is not separately specified in these Recommendations, but it will be understood that the authorities of Licensing Bodies and of Medical Schools are responsible for ensuring that such instruction in this subject as is required by the law for the time being in force is given as part of the instruction in Immunology and Immunization.

XUM

Correspondence.

POST-OPERATIVE FLATULENCE OR "GAS" PAINS.

SIR: I have hesitated to reply to my friend, Mr. Kinsella. His violent reaction to my last letter somewhat unnerved me. The oil, which was poured on the troubled waters, appears to have been highly inflammable.

In his letter, Mr. Kinsella, with characteristic vigour, challenges me to stand and defend certain forms of treatment, as though I were their champion. This assumption is far from correct. It is true that I, in common with most of the rest of the profession, am at present of the opinion that patients should come to the operating table with their bowel empty and that, in most cases, the bowels should be opened a few days after operation. This is the view, with several alternatives, which was put into the "Clinical Handbook" and which has so aroused Mr. Kinsella. It is undoubtedly the reigning view; Mr. Kinsella's view is the pretender to the throne. True, the method of "elective alimentary rest" has made considerable progress and has a number of enthusiastic adherents. I am sure Mr. Kinsella would agree that the method has not yet received general acceptance. In these circumstances, who am I to depose the ruling monarch?

Surgery is a movement, not a monument. It is always changing. New and more apt methods must constantly replace the old. Mr. Kinsella and those like him do a great service to medicine in the bringing forward of new methods and new ideas. The general acceptance or rejection of these methods is determined not by the theoretical claims of their sponsors, but by their real value in actual practice. It is Time, not I, who must give the answer to Mr. Kinsella.

Finally, for the benefit of those who one day might feel impelled to write a book, I would ask them to ponder deeply the words of *Job*, xxxi, 35: "Oh that one would hear me! behold, my desire is, that the Almighty would answer me, and that mine adversary had written a book."

Yours, etc.,

225, Macquarie Street, Sydney,
July 7, 1947.

V. M. COPPLESON.

Medical Practice.

MEDICAL PRACTICE IN THE NORTHERN TERRITORY.

THE following correspondence is published at the request of the Medical Secretary of the Victorian Branch of the British Medical Association as throwing light on the conditions of medical practice in the Northern Territory.

[COPY.]

BRITISH MEDICAL ASSOCIATION.
(Victorian Branch.)

12th May, 1947.

The Secretary,
Department of Home and Territories,
Canberra, A.C.T.
Dear Sir,

It would be very much appreciated if you would supply the following information at your early convenience:

(i) Is a legally qualified medical practitioner, registered under the Medical Acts of the State of Victoria, at liberty to commence private medical practice in Darwin and/or the Northern Territory?
(ii) If so, what would be his prospects of obtaining and in what way could he obtain accommodation suitable for residential and professional purposes?
(iii) Would he have access to hospital facilities for the treatment of patients, and if so, what are those facilities?
(iv) If private medical practice is prohibited in the Northern Territory, would you be good enough to advise me of the authority, statutory or otherwise, under which such prohibition is made?

Yours faithfully,
C. H. DICKSON,
Medical Secretary.

[COPY.]

COMMONWEALTH OF AUSTRALIA.

Department of Health,
Canberra, A.C.T.,
6th June, 1947.

Dear Dr. Dickson,

Your letter of 12th May has been forwarded to me by the Secretary, Department of the Interior, as this department operates the Northern Territory Medical Services.

I would answer your question as follows:

(i) Yes. There is no ban on private practice, but under the Ordinance (No. 6 of 1946) relating to Medical Benefits and Hospital Administration, any person who has been a resident in the Northern Territory for at least 30 days is entitled to receive without charge full medical attention including hospitalization, etc. Under these circumstances it is not considered that there would be much scope for private practice.
(ii) Accommodation in all centres in the Northern Territory, but especially in Darwin, is extremely short, and considerable difficulty has been experienced in obtaining housing for officers of the Northern Territory Medical Service.
(iii) This department operates hospitals at Darwin, Katherine, Tennant Creek and Alice Springs. These hospitals are staffed by full-time medical officers appointed by the department. As there has been no medical practitioner in private practice in the Territory since the control of the service was assumed by this department, the question of access to hospital facilities has never arisen.
(iv) Not applicable.

Yours faithfully,
(Signed) A. J. METCALF.
A/Director-General of Health.

Dr. C. H. Dickson,
Medical Secretary,
Medical Society Hall,
426 Albert Street,
Melbourne, Victoria.

Post-Graduate Work.

POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

A FILM AFTERNOON.

THE Post-Graduate Committee in Medicine in the University of Sydney announces that the following medical films will be shown at the Stawell Hall of the Royal Australasian College of Physicians, 145, Macquarie Street, Sydney, at 4.30 o'clock p.m. on Wednesday, July 23, 1947: (*a*) "Peptic Ulcer", (*b*) "Subtotal Gastrectomy for Gastrojejunal Ulcer".

All civilian medical practitioners and service medical officers are invited to attend. Further inquiries should be made by communicating with the Secretary of the Post-Graduate Committee in Medicine, 131, Macquarie Street, Sydney. Telephones: BW 7483, B 4606.

WEEK-END COURSE AT LISMORE.

THE Post-Graduate Committee in Medicine in the University of Sydney, in conjunction with the North-Eastern Medical Association, will hold a week-end course at Lismore, New South Wales, on Saturday and Sunday, August 2 and 3, 1947. The programme is as follows.

Saturday, August 2, at the Lismore Municipal Council Chambers.

2.30 p.m.: "Some Aspects of the Surgical Treatment of Thyreotoxicosis", Dr. S. Livingstone Spencer.
4.30 p.m.: "Medical Aspects of Thyreoid Diseases", Dr. Kenneth B. Noad.
8 p.m.: "Democracy in Australia", Dr. R. B. Madgwick.

Sunday, August 3, at the Lismore Municipal Council Chambers.

9.30 a.m.: "Practical Points in Thyreoid Surgery", Dr. S. Livingstone Spencer.
11 a.m.: "Medical Aspects of Thyreoid Disease", Dr. Kenneth B. Noad.

2 p.m.: Meeting of the North-Eastern Medical Association.

The fee for the course will be £1 1s. There will be no charge for members of the defence forces. Those wishing to attend are requested to notify Dr. M. R. Robertson, Honorary Secretary, North-Eastern Medical Association, Lismore, as soon as possible.

THE MELBOURNE PERMANENT POST-GRADUATE COMMITTEE.

LATE AFTERNOON COURSE.

THE Melbourne Permanent Post-Graduate Committee announces that Dr. Ian Wood, Assistant Director of the Walter and Eliza Hall Institute, has arranged a course of demonstrations which will be given on Tuesdays, at the Medical Society Hall, 426, Albert Street, East Melbourne, commencing punctually at 4.30 p.m., on "The Application of Recent Advances in Gastro-Intestinal Disorders to General Practice".

The programme is as follows:

August 19: "Some Aspects of the Pathology of the Alimentary Canal", Dr. Edgar King.
August 26: "Diagnosis and Medical Management of Gastric Disorders", Dr. John Horan.
September 2: "Diagnosis, Treatment and Prognosis of Diseases of the Liver", Dr. Ian Wood.
September 9: "Indications for Surgery in Diseases of the Stomach, Duodenum, and Biliary System", Dr. Julian Smith.

The fee for this course is £2 2s., or 10s. 6d. per demonstration, and enrolments should be made with the Secretary of the Committee, College of Surgeons, Spring Street, Melbourne, JM 1547-8, two weeks before the commencement of the course. This is an approved course under the Commonwealth Reconstruction Training Scheme.

Obituary.

JOHN RHYS WILLIAMS.

WE are indebted to Dr. J. P. Major for the biographical details in the following account of the career of the late Dr. John Rhys Williams.

It is not given to many to possess such widespread esteem and affection as did John Rhys Williams; his death on April 19, 1947, at the comparatively early age of fifty-four years has caused much regret and sorrow.

"Jock", as he was called affectionately by a great many of his friends and colleagues, was born at Ballarat. He was the elder son of the late Mr. J. L. Williams and Mrs. Williams. His father was a schoolmaster and from him "Jock" received his early education. Winning a government scholarship, he completed his schooling at Wesley College, Melbourne. From Wesley College he won a government exhibition which took him to the University of Melbourne and also a resident scholarship which allowed him to be in residence at Queen's College during his medical course. In that course he obtained first-class honours in each year; but the final examinations, owing to wartime conditions, were held without special provisions for honours to enable the successful candidates to enlist all the sooner in the Australian Imperial Force. While in residence at Queen's College he played representative cricket, football and tennis and gained his university blue for lacrosse.

Immediately on graduation in 1916 he enlisted and served in the Australian Army Medical Corps in France from then till the Armistice in November, 1918. He rendered excellent service and was very popular with his fellow officers and men. For another reason, stated later, he became very well known and liked by large numbers of the troops outside his own unit.

Shortly after the Armistice he accepted appointment as resident medical officer at the King Edward VII Hospital, now the Cardiff Royal Infirmary. He used to say that when his name appeared on the resident staff board, amusement and surprise resulted when it was discovered that with such a good Welsh name he could not speak the local language.

Towards the end of 1919 he returned to Melbourne, and early in 1920 he commenced his long service at the Melbourne Hospital, now known as the Royal Melbourne Hospital. From 1921 to 1924 he was its medical superintendent, with great credit to himself and much benefit to the hospital. During that period he obtained the senior medical degree, Doctor of Medicine.

There was a brief break in the continuity of his work in Melbourne when for a short period he joined Dr. Roy Bartram in general practice at Mount Barker. He soon came to practise in East St. Kilda and in Collins Street and there he stayed till his final illness. For about twenty years he held a very large practice associated with honorary medical work at his hospital where he is best known as the founder and officer-in-charge of the special diabetic clinic. He was also non-resident medical superintendent at the Caulfield Convalescent Hospital for many years. When 115 Military Hospital was opened at Heidelberg in 1941, Williams was appointed registrar with the rank of lieutenant-colonel. He filled that position with distinction until he was invalided out in 1944. It is probable that the stress and strain of his military work during those years was the main factor in the causation of the events leading to his death, for he was never one to spare himself and the work was arduous and worrying.

In addition to his high professional ability "Jock" had an intense interest in people and was always an earnest student of human nature. He also had an exceptionally good memory for names and faces. These two assets gained for him the regard and affection of large numbers of men and women in and out of the services. Numbered among them were many members of the nursing profession whose welfare he always had at heart. Another attractive social attribute was the great beauty of his tenor voice; even so recently as during the last war he gave great pleasure by singing for the soldiers in the wards at Heidelberg.

We have lost one who was a great ornament to his profession and who, by his personal qualities, endeared himself to a very large number of people. The sympathy of his colleagues is extended to his widow, who is also a medical graduate, to his two daughters, to his mother and to his other relatives.

Dr. Fay Maclure writes: "Jock" Williams possessed a delightful tenor voice and a love of music which he continually developed during his lifetime. Whilst on service with the Australian Imperial Force and on the staff of Number 1 Casualty Clearing Station in France his musical leanings and his cheery temperament enabled him to gather round him a band of Australian Army Medical Corps members who, under his leadership and fired by his enthusiasm, provided many pleasant entertainments for the patients of the clearing station—at one stage increased to 1,000 bed capacity as a corps rest station. That band today is scattered from Hobart to Queensland, but it is remarkable how quickly the news of their leader's death was spread among them and how deep was their regret at his loss.

Dr. Roy D. Bartram writes: Though he attained a well-earned place in the ranks of consultant physicians, Jock Williams was at his best as the trusted family doctor and confidant. This was recognized in his earliest venture in private practice. In a short two years he endeared himself to all classes in a busy country practice, and his departure from Mount Barker in 1927 called forth unusually genuine expressions of gratitude and regret.

He impressed by his sincerity, plain speaking and straight dealing. This was based on clear thinking and an infinite capacity for taking pains, joined to a sympathetic interest in the personal problems of the patient. He seldom forgot a name, and never a face.

He had a genius for inspiring confidence in his patients and friendship in his acquaintances. Those who knew him best trusted him most. Hence arose the widespread affection felt for him by members of the nursing staffs with whom he worked in various hospitals and demonstrated by the devotion with which they volunteered to assist in nursing him through the trying weeks of his final illness.

Within the family circle he was always a devoted son and beloved brother. To his wife and daughters he was the ideal "father" and he eagerly watched his girls' progress in school life and especially in school games.

Amongst his professional colleagues Jock had many friends and no enemies. His unfailing good humour expressed in a happy smile and a cheery greeting made him welcome in any company. This was not merely an attitude, but the expression of his personality. Two world wars thwarted him as they did so many of his contemporaries. He joined the Australian Imperial Force the day he graduated in 1915, and in the second war wore himself out by unceasing work at Heidelberg. Whatever the work or the problem, Jock met it with a smile, and the determination that if hard work counted (and it always did with him) he would win through.

But Jock could and did enjoy his relaxations. His ability at lacrosse, cricket and tennis enabled him to participate with gusto in many representative teams, and in later years

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a quiet round of the links was always a temptation to him. He often charmed his friends, and occasionally, at soldiers' concerts, a wider audience, with his delightful singing.

Hail and farewell to a beloved physician, a staunch friend and a cheery companion.

EDWARD THOMAS THRING.

WE regret to announce the death of Dr. Edward Thomas Thring, which occurred on July 11, 1947, at Sydney

FRANCIS CLEMENTS CROSSLE.

WE regret to announce the death of Dr. Francis Clements Crossle, which occurred on July 12, 1947, at Bellevue Hill, New South Wales.

Research.

THE WILLIAM GIBSON RESEARCH SCHOLARSHIP FOR MEDICAL WOMEN.

MISS MAUD MARGARET GIBSON has placed in the hands of the Royal Society of Medicine a sum of money to provide a scholarship in memory of her father, the late Mr. William Gibson, of Melbourne, Australia. The scholarship is awarded from time to time by the society to qualified medical women who are subjects of the British Empire, and is tenable for a period of two years, but may in special circumstances be extended to a third year. The next award will be made in October, 1947.

In choosing a scholar the society will be guided in its choice either by research work already done by her or by research work which she contemplates. The scholar shall be free to travel at her own will for the purpose of the research she has undertaken.

There is no competitive examination, nor need a thesis or other work for publication or otherwise be submitted. The society has power at any time to terminate the grant if it has reason to be dissatisfied with the work or conduct of the scholar.

Applications should be accompanied by a statement of professional training, degrees or diploma, and of appointments, together with a schedule of the proposed research. Applications must be accompanied by testimonials, one as to academical or professional status, and one as to general character. Envelopes containing applications *et cetera* should be marked on the top left-hand corner, "William Gibson Research Scholarship", and should be addressed to Mr. G. R. Edwards, Secretary, Royal Society of Medicine, 1, Wimpole Street, London, W.1, and be received not later than October 1, 1947. The approximate value of the scholarship will be £200 *per annum*.

Nominations and Elections.

THE undermentioned have applied for election as members of the South Australian Branch of the British Medical Association:

Wurm, Roger Sinclair, M.B., B.S., 1947 (Univ. Adelaide), 80, Main North Road, Prospect.

Ellis, Howards John, M.B., B.S., 1946 (Univ. Adelaide), 30, Marlborough Street, Brighton.

Tippelt, Ferdinand Marcel, M.B., B.S., 1942 (Univ. Adelaide), Quorn.

The undermentioned has been elected as a member of the South Australian Branch of the British Medical Association:

Ball, Karl George, M.B., B.S., 1946 (Univ. Adelaide), 63, Park Terrace, Parkside.

Books Received.

"The Glands of Destiny: A Study of the Personality", by Ivo Geikie-Cobb, M.D.; Third Edition; 1947. London: William Heinemann (Medical Books), Limited. 8½" × 5½", pp. 270, with many illustrations. Price: 15s.

"The Art of Healing", by Bernard Aschner, M.D.; 1947. London: Research Books, Limited, and William Heinemann (Medical Books), Limited. 7½" × 4¾", pp. 350. Price: 12s. 6d.

"Health Reform in New Zealand", by Douglas Robb; 1947. New Zealand: Whitcombe and Tombs, Limited. 7¼" × 4¾", pp. 104. Price: 2s. 6d.

"The Design of Experiments", by Ronald A. Fisher, Sc.D., F.R.S.; Fourth Edition; 1947. Edinburgh and London: Oliver and Boyd. 8¼" × 5½", pp. 256. Price: 12s. 6d.

Diary for the Month.

JULY 22.—New South Wales Branch, B.M.A.: Ethics Committee.
JULY 23.—Victorian Branch, B.M.A.: Council Meeting.
JULY 24.—New South Wales Branch, B.M.A.: Clinical Meeting.
JULY 25.—Queensland Branch, B.M.A.: Council Meeting.
JULY 31.—New South Wales Branch, B.M.A.: Branch Meeting.
AUG. 1.—Queensland Branch, B.M.A.: Branch Meeting.
AUG. 5.—New South Wales Branch, B.M.A.: Organization and Science Committee.
AUG. 6.—Western Australian Branch, B.M.A.: Council Meeting.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute; Brisbane City Council (Medical Officer of Health). Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such notification is received within one month.

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